ORDER NO. VMD9807047C3

Service Manual

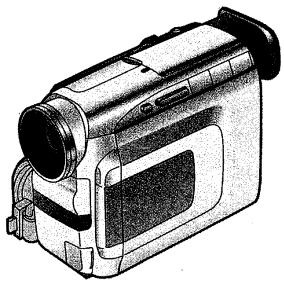
Volume 1

General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Panasonic Mini DV PAL
Digital Video Camera/Recorder

NV-DS77EN/ENA

Q1-MECHANISM



SPECIFICATIONS

ITEM	SPECIFICATION
POWER	Source: Battery Pack; 7.2 V DC AC Adaptor; 7.9 V DC Consumption: During Camera Recording Using The LCD; 5.6 W During Camera Recording Using The Viewfinder; 4.3 W
RECORDING FORMAT	Digital Video SD Format
TAPE FORMAT	Mini DV Cassette Tape (Tape width 6.35 mm)
TAPE SPEED	SP mode: 18.83 mm/s LP mode: 12.57 mm/s Record/ Playback Time SP mode: 60 min. with DVM60 LP mode: 90 min. with DVM60
CAMERA	PICK-UP ELEMENT: CCD (Charge Coupled Device)
	STANDARD ILLUMINATION: 1,400 lux
	MINIMUM REQUIRED ILLUMINATION: 1 Lux
	LENS: 10 : 1 Wide-angle Power Zoom Lens (Optical capability) F1.4 Focal Length: 4.7–47.0 mm Digital AI Auto Focus/Auto Iris Filter Diameter: 30.5/34.0 mm
	IMAGE SENSOR: 1/3 inch CCD Image Sensor
	VIEWFINDER: 0.5 inch Colour Electronic Viewfinder 3.8 inch Colour LCD Monitor
VIDEO	RECORDING FORMAT: Digital Component
	TELEVISION SYSTEM: CCIR; 625 Lines, 50 Fields PAL Colour Signal
	VIDEO OUTPUT LEVEL: 1.0 Vp-p, 75Ω (OUTPUT TERMINAL BOX) S-VIDEO OUTPUT LEVEL; Y: 1.0 Vp-p, 75Ω C: 0.3 Vp-p, 75Ω (OUTPUT TERMINAL BOX)

ITEM	SPECIFICATION
AUDIO	RECORDING FORMAT: PCM Digital Recording; 16 bit (48 kHz/2 ch) 12 bit (32 kHz/4 ch)
	MIC IN LEVEL: –70 dBV, 5.6 kΩ (OUTPUT TERMINAL BOX) OUTPUT LEVEL: 316 mV, 600Ω (OUTPUT TERMINAL BOX)
DIGITAL STILL PICTURE	Digital Still Picture Output, Control Signal Input/Output (Transfer rate: max. 115 kbps)
DIGITAL INTERFACE	DV Output Terminal (i. LINK, 4 pin))
MICROPHONE	Stereo
SPEAKER	1 round speaker ϕ 20 mm
OPERATING TEMPERATURE	0–40°C
OPERATING HUMIDITY	10–80%
WEIGHT	Approx. 590 g (without Battery Pack)
DIMENSIONS	Approx. 58 (W)×97 (H)×142 (D) mm
STANDARD ACCESSORIES	1 pc. AC Adaptor 1 pc. Battery Pack Unit 1 pc. S-VIDEO Cable 1 pc. Shoulder Belt 1 pc. DC Cable Unit 1 pc. AC Cord 1 pc. AV Output Cable 1 pc. Remote Controller 1 pc. Battery for Remote Controller 1 pc. Output Terminal Box 1 pc. Lens Cleaner 1 pc. Soft Case 1 pc. Cassette 1 pc. Cleaning Cassette

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

INTRODUCTION 1

Note 1 : These movie camera uses AC Adaptor VW-AD7E/B/A.
The Service Manual for AC Adaptor is separate volume.

Order number for VW-AD7E/B/A **: VMD9807039C8**

INTRODUCTION 2

Note : NV-DS77

NV-DS77 series has to versions depends on countries.
Detail as follows.

Model-No. (Version)	NV-DS77EN	NV-DS77ENA
PACKING CASE	VPK2153	VPK2154
AC-CABLE	VJA0998	VJA0754

Note :
This service manual does not contain the following information because of the impossibility of servicing at component level.

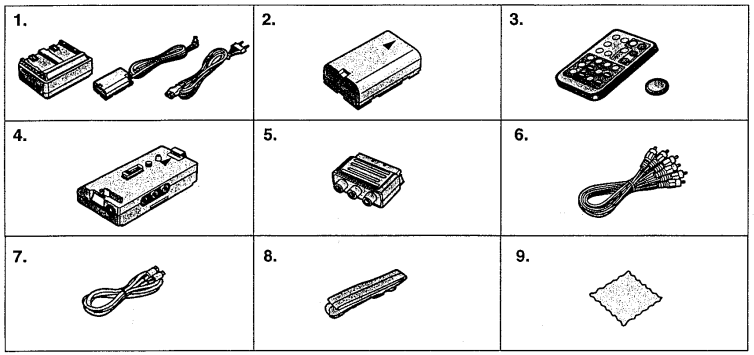
① Schematic diagram and C.B.A. layout of VTR Main C.B.A.
② Parts list for individual parts of VTR Main C.B.A.
③ Exploded view and parts list for individual parts of Mechanism

When a part replacement is required for repairing VTR Main C.B.A. and/or mechanism block, replace the assembly parts (VTR Main C.B.A. and/or Mechanism unit).

The following circuits are contained in VTR Main C.B.A.
① Process Circuit
② Video Circuit (Ⅰ, Ⅱ)
③ Control Circuit
④ Drive Circuit
⑤ Main Connection Circuit
⑥ Digital I/F Circuit

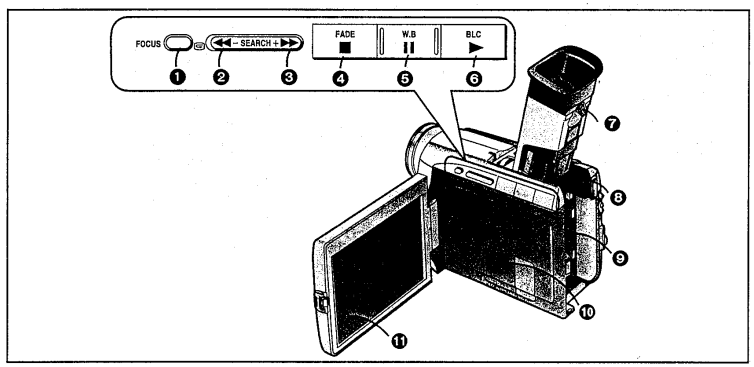
CONTENTS

SERVICE INFORMATION 1
SECTION 1 GENERAL DESCRIPTIONS 1-1
SECTION 2 ADJUSTMENT PROCEDURES 2-1
2-1. DISASSEMBLY FLOW CHART 2-1
2-2. DISASSEMBLY PROCEDURES 2-2
2-3. DISASSEMBLY PROCEDURES OF LENS UNIT 2-8
SECTION 3 BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS 3-1
3-1. ABBREVIATIONS 3-1
3-2. OVERALL BLOCK DIAGRAM 3-8
3-3. INTERCONNECTION SCHEMATIC DIAGRAM 3-10
3-4. CAMERA CONNECTION SCHEMATIC DIAGRAM 3-14
3-5. SENSOR SCHEMATIC DIAGRAM 3-16
3-6. LENS DRIVE SCHEMATIC DIAGRAM 3-18
3-7. SP DRIVE SCHEMATIC DIAGRAM 3-19
3-8. LCD SCHEMATIC DIAGRAM 3-20
3-9. CDS/AGC SCHEMATIC DIATRAM 3-22
3-10. E.V.F. SCHEMATIC DIAGRAM 3-24
3-11. POWER & S/S POWER FLEX. CARD SCHEMATIC DIAGRAM 3-25
3-12. MONITOR & SENSOR FLEX. CARD SCHEMATIC DIAGRAM 3-28
3-13. MIC UNIT SCHEMATIC DIAGRAM 3-31
3-14. OPERATION FLEX. UNIT & TOP OPERATION UNIT 3-32
3-15. CAMERA [Camera Connection, Sensor, Lens Drive, SP Drive, LCD Section] C.B.A. 3-34
3-16. POWER C.B.A. 3-36
3-17. MIC UNIT 3-38
3-18. CDS/AGC C.B.A. 3-39
3-19. E.V.F. C.B.A. 3-40
3-20. MONITOR C.B.A. 3-41
SECTION 4 EXPLODED VIEWS & PARTS LIST 4-1
4-1. EXPLODED VIEWS & MECHANICAL REPLACEMENT PARTS LIST 4-1
❶ FRAME & CASING PARTS SECTION (1) 4-1
❷ FRAME & CASING PARTS SECTION (2) 4-3
❸ LCD PARTS SECTION 4-5
❹ CAMERA LENS SECTION 4-6
❺ PACKING PARTS & ACCESSORIES SECTION 4-7
4-2. ELECTRICAL REPLACEMENT PARTS LIST 4-9



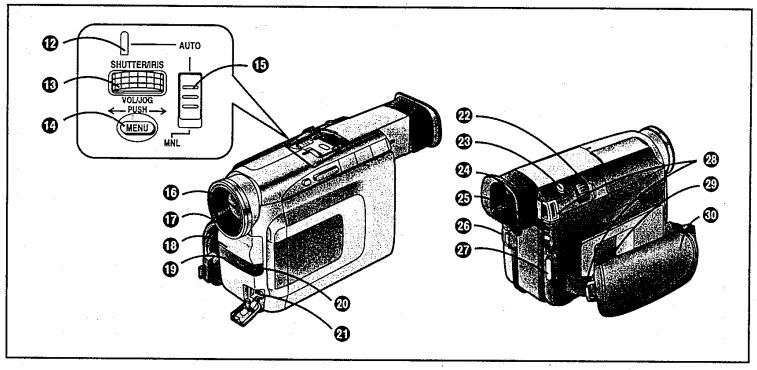
Standard Accessories

1. **AC Adaptor (➔ 16, 18, 138)**
   To supply power to the Movie Camera.
   To charge the Battery.
   DC Input Cable and AC Mains Cable (➔ 16, 18)
   To connect the AC Adaptor to the Movie Camera and to an AC mains socket.
2. **Battery Pack (➔ 18)**
   To supply the Movie Camera with power.
3. **Remote Controller and Button-Type Battery (➔ 98, 106)**
4. **Output Terminal Box [AV ONE TOUCH STATION] (➔ 52, 54, 110)**
   Equipped with AV Sockets, Edit Socket, Digital Still Picture Terminal, Mic socket and Headphone Socket.
5. **21-pin Adaptor (➔ 52, 112, 114, 116)**
6. **AV Cable (➔ 52, 112, 114, 116)**
7. **S-Video Cable (➔ 52, 112, 114, 116, 118, 120)**
8. **Shoulder Strap (➔ 28)**
9. **Cleaning Tissue**
   To clean the Lens and the LCD Monitor.

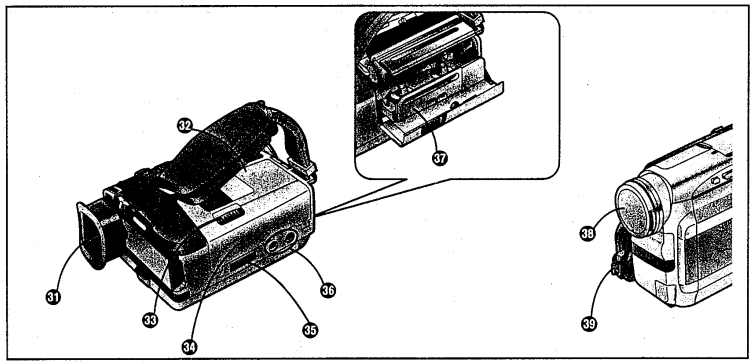


Controls and Components

1. **Focus Button [FOCUS] (➔ 84)**
2. **Reverse Search Button [– SEARCH] (➔ 56)**
   Rewind/Review Button [◀◀] (➔ 46)
   Recording Check Button [⊡] (➔ 32)
3. **Forward Search Button [SEARCH +] (➔ 56)**
   Fast Forward/Cue Button [▶▶] (➔ 46)
4. **Fade Button [FADE] (➔ 66)**
   Stop Button [■] (➔ 44)
5. **White Balance Button [W.B] (➔ 80, 82)**
   Pause Button [❚❚] (➔ 50)
6. **Backlight Button [BLC] (➔ 32)**
   Play Button [▶] (➔ 44, 46)
7. **Eyepiece Corrector Lever (➔ 26)**
8. **Battery Eject Button [BATT. EJECT PUSH] (➔ 18)**
9. **Battery Holder**
10. **Speaker (➔ 44)**
11. **LCD Monitor (➔ 26)**



12. **Auto Mode Lamp**
    This lamp lights when you set the Mode Selector Switch to [AUTO].
13. **Multi-Function Dial [PUSH] (➔ 44, 46, 86, 88, 126)**
14. **Menu Button [MENU] (➔ 126)**
15. **Mode Selector Switch [AUTO/MNL] (➔ 80, 82, 84, 86)**
16. **Lens**
17. **Lens Hood (➔ 154)**
18. **Microphone (built-in, stereo)**
19. **White Balance Sensor (➔ 162)**
    Remote Control Sensor (➔ 108)
20. **Recording Lamp (➔ 30)**
21. **DV Terminal (i.LINK) [⚷]**
    To output digital signals.
    Connect it to digital video equipment.
    "i.LINK" is the name of the connector in accordance with the International Standard IEEE1394-1995.
    "⚷" is the logo marked on products conforming with the "i.LINK" specifications.
    Inputting digital signals into this Movie Camera is not possible.
22. **Zoom Lever [W/T] (➔ 36, 82)**
23. **Photoshot Button [PHOTO SHOT] (➔ 38)**
24. **Eyecup**
25. **Selector Switch for Camera Mode/Power Off/ VCR Mode [POWER] (➔ 26, 30, 44, 54)**
26. **LCD Monitor Open Button [PUSH OPEN] (➔ 26)**
27. **Recording Start/Stop Button (➔ 30)**
28. **Shoulder Strap Holders (➔ 28)**
29. **Cassette Compartment Window (➔ 22)**
30. **Grip Belt (➔ 28)**



㉛ **Finder (➔ 26)**

㉜ **Upper Cassette Compartment Cover (➔ 22)**

㉝ **Cassette Eject Lever [OPEN/EJECT] (➔ 22, 54)**

㉞ **Lower Cassette Compartment Cover (➔ 22)**

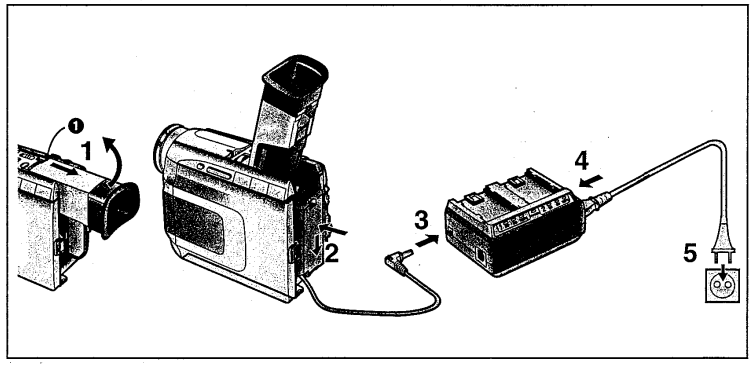
㉟ **Multi Terminal (➔ 52, 54, 110)**

㊱ **Tripod Receptacle**
To mount the Movie Camera on an optional tripod.

㊲ **Cassette Holder (➔ 22)**

㊳ **Lens Cap (➔ 28, 54, 82)**

㊴ **Lens Cap Holder**



The 3 Types of Power Supplies

1) AC Adaptor (supplied) to supply power from an AC mains socket
2) Car Adaptor Cord (optional) to supply power from a Cigarette Lighter Socket
3) Battery (supplied) **(➔ 18)**

■ Supplying Power from an AC Mains Socket

1 Hook your finger on the protruding edge ❶ of the Finder, slide the Finder backward to its fully extended position and then tilt it upward.
Do not pull on the Eyecup to extend the Finder.

2 Insert the battery-shaped connector of the DC Input Cable as shown above into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.

3 Connect the other end of the DC Input Cable to the AC Adaptor.

4 Connect the AC Mains Cable to the AC Adaptor.

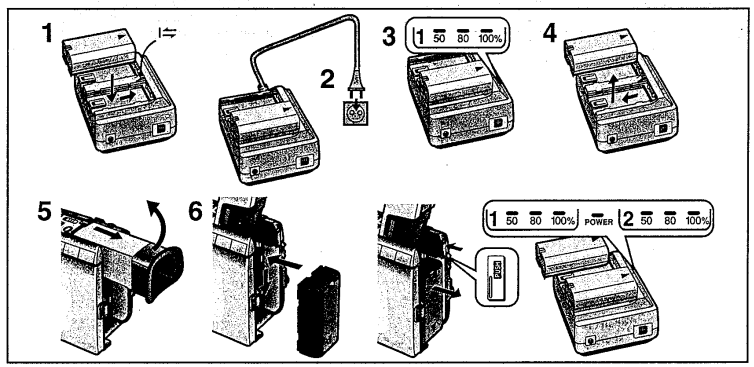
5 Connect the other end of the AC Mains Cable to an AC mains socket.

- Before disconnecting the AC Mains Cable, set the [POWER] Switch on the Movie Camera to [OFF].
- If you use the Movie Camera for a long time, it becomes warm. However, this is normal.

■ Supplying Power from the Cigarette Lighter Socket in a Car

The use of the Car Adaptor Cord (VW-KA7E; optional) together with the AC Adaptor makes it possible to supply power to the Movie Camera in a car for recording and playback. It also allows charging the Movie Camera's Battery.

- After use, be sure to disconnect the Car Adaptor Cord from the Cigarette Lighter Socket.
- Be sure to start the car engine before you connect the Car Adaptor Cord, otherwise the fuse may blow.
- Also read the operating instructions of the Car Adaptor Cord.



■ Supplying Power with the Battery

Before use, fully charge the Battery.

1 Place the Battery on the AC Adaptor as shown above and slide it horizontally until it stops.

2 Connect the AC Mains Cable to an AC mains socket.

3 When all three Charge Lamps on the AC Adaptor are lit, charging is finished.

- The Charge Lamps [50%], [80%] and [100%] flash and then remain lit one after another. These lamps indicate the approximate charging condition reached.

4 Remove the Battery by sliding it in the opposite direction of Step 1 above.
Also disconnect the AC Mains Cable.

5 Slide the Finder backward to its fully extended position and then tilt it upward.

6 Insert the Battery into the Battery Holder on the Movie Camera and slide it downward until it locks with a click.

Removing the Battery from the Movie Camera

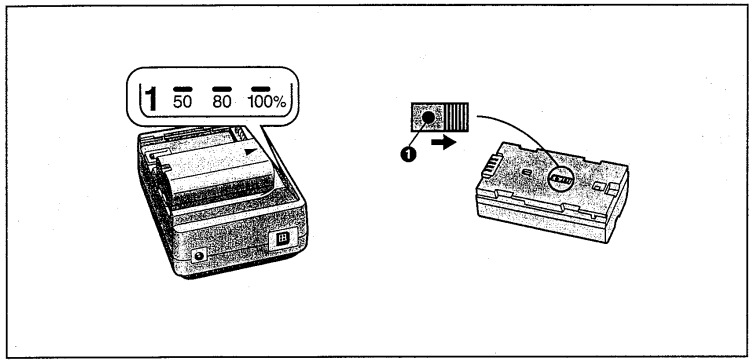
While pressing the [BATT. EJECT PUSH] Button, slide the Battery upward to remove it.

- Be careful not to drop the Battery by accident.
- Before removing the Battery, set the [POWER] Switch to [OFF].

Charging Two Batteries

If you attach two Batteries to the AC Adaptor, they will be charged one after the other. To charge, follow Steps 1 - 3 .

- Charging starts from Battery 1. At this time, the Charge Lamps for Battery 2 show the remaining charge in the Battery 2. (If the remaining charge is less than 50%, no Charge Lamp is lit.)



Charging Time and Maximum Time for Continuous Recording

Battery No.	Charging Time	Max. Continuous Recording Time
Supplied	60 min.	75 min. (60 min.)
CGR-D120	60 min.	75 min. (60 min.)
CGP-D210	110 min.	130 min. (105 min.)
CGR-D220	120 min.	160 min. (130 min.)
CGP-D320	195 min.	280 min. (220 min.)
CGR-D815	320 min.	540 min. (420 min.)

(The times shown in the above chart are approximations. The figures in parentheses show the recording time when using the LCD Monitor.)
The times listed above for your information indicate the duration of recording performed at an ambient temperature of 20°C and 60% relative humidity. The charging time may be longer when you charge the Battery at higher or lower temperature.

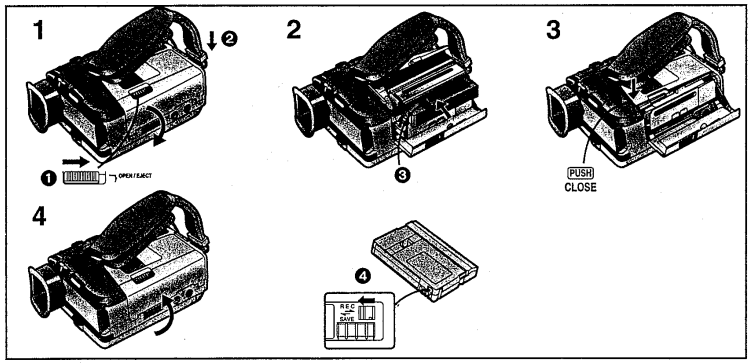
- During use and charging, the Battery becomes warm. The Movie Camera, too, becomes warm during use.
- When you repeatedly stop and restart recording, the recording time per Battery is shorter than listed above.
- If you do not use the Battery for a long time, please read "Precautions for Storage" **(➔ 152)**.

When the Charge Lamps Flash as Warning

If the ambient temperature is extremely low or extremely high, the Charge Lamps on the AC Adaptor flash. They also flash when some malfunction has occurred in the Battery or the AC Adaptor. For details, read "When the Charge Lamps on the AC Adaptor Flash as Warning" **(➔ 150)**.

Using the Charge Confirmation Marker

You can use this marker to easily distinguish between charged and discharged Batteries.
For example, slide the knob so that the red dot (●) ❶ is visible after the charging is completed.



Inserting the Cassette

1 Slide the [OPEN/EJECT] Lever ❶ to the right and open the Lower Cassette Compartment Cover completely.
The Cassette Holder slides out.

2 Insert the cassette with its window in position ❸ shown above.

3 Press on the [PUSH CLOSE] mark to close the Upper Cassette Compartment Cover.
The Cassette Holder with the cassette slides back inside.
Confirm that the Cassette Holder has retracted completely.

4 Close the Lower Cassette Compartment Cover.

- If the Battery is attached or the AC Adaptor connected, you can operate Step 1 even without turning on the Movie Camera.
- When opening or closing the Cassette Compartment, push down the buckle ❷ of the Grip Belt in the direction of the arrow so it does not obstruct the opening and closing of the Cassette Compartment.
- When inserting the cassette, make sure it faces in the right direction and then push it in until it stops.
- When you insert a cassette onto which you have recorded before, use the Camera Search Function **(➔ 56)** to search for the position from which you want to continue recording.
- When you insert a new cassette, rewind the tape to the beginning before starting to record.

Preventing Accidental Erasure of Recordings
Opening the cassette's erasure prevention slider ❹ (sliding it in the direction of the [SAVE] arrow) prevents recording. To record again, close the erasure prevention slider (slide it in the direction of the [REC] arrow).

If the Cassette Holder Does Not Slide Back in
- Press on the [PUSH CLOSE] mark and close the Upper Cassette Compartment Cover securely.
- Turn the Movie Camera off and then on again.
- Check if the Battery is discharged.

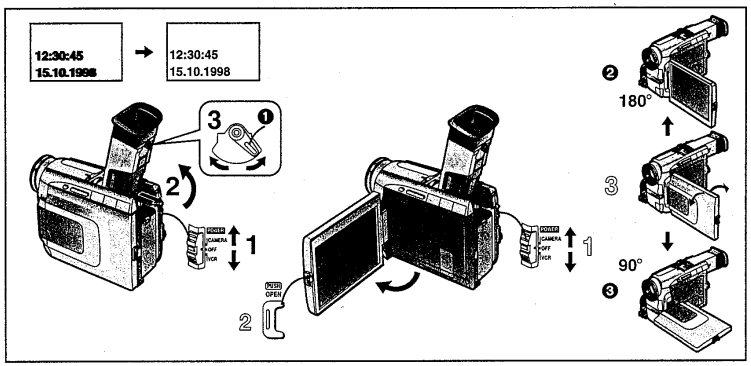
If the Cassette Holder Does Not Slide Out
- Close the Lower Cassette Compartment Cover completely and then open it again.
- Check if the Battery is discharged.

■ LP Mode

The desired recording speed can be selected with [REC SPEED] on the [CAMERA MENU2] Menu. (➔ 130)

If you select the LP Mode, the possible recording time is 1.5 times as long as in the SP Mode.
Recording in the LP mode does not deteriorate the picture quality. However, the playback picture may contain mosaic-like patterns and certain functions may be restricted.

- In the following cases, mosaic-like patterns may appear in the playback picture, or the picture may not be played back correctly:
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on other digital video equipment.
  - When a cassette recorded in the LP Mode on other digital video equipment is played back on this Movie Camera.
  - When a cassette recorded in the LP Mode on this Movie Camera is played back on digital video equipment not featuring the LP Mode.
  - In the Slow Motion or Still Advance Playback Mode. **(➔ 48, 50)**
  - When using the Camera Search Function. **(➔ 56)**
- As the recording track width in the LP Mode is smaller than the head width, recording new sound onto an already recorded cassette (audio dubbing) **(➔ 94)** is not possible.



Using the Finder

Before using the Finder, adjust it to your eyesight so that the indications in the Finder are clear and easy to read.

1 Set the [POWER] Switch to [CAMERA] or [VCR].
While pressing the centre button, slide the switch to [CAMERA] or [VCR].

2 Slide the Finder backward completely and then tilt it upward.
Do not pull on the Eyecup to extend the Finder. The Finder can be tilted upward by up to approximately 75°.

3 Adjust by turning the Eyepiece Corrector Lever ❶.
It is also possible to adjust the brightness of the Finder with the item [LCD/EVF SET] on the [CAMERA MENU3] Menu (➔ 132) or [VCR MENU2] Menu (➔ 134).

Using the LCD Monitor

You can also record while viewing the picture on the opened LCD Monitor.

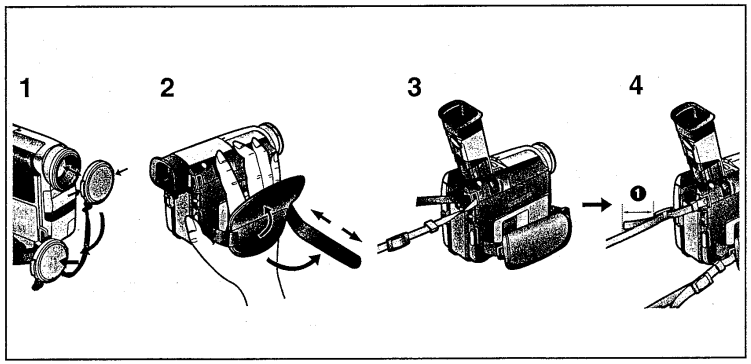
1 Set the [POWER] Switch to [CAMERA] or [VCR].
While pressing the centre button, slide the switch to [CAMERA] or [VCR].

2 Press the [PUSH OPEN] Button and turn out the LCD Monitor by approximately 90° in the direction of the arrow.
The Finder turns off.

Adjusting the Angle

3 Adjust the angle of the LCD Monitor according to the recording angle.
- The LCD Monitor rotates upward a maximum of 180° ❷ and downward by a maximum of 90° ❸ from its normal vertical position. Trying to forcefully rotate it beyond this range could seriously damage the Movie Camera.
- It is also possible to adjust the colour saturation and brightness of the LCD Monitor with the item [LCD/EVF SET] on the [CAMERA MENU3] Menu (➔ 132) or [VCR MENU2] Menu (➔ 134).

Closing the LCD Monitor
Push the LCD Monitor close until the [PUSH OPEN] Button locks with a click.



Handling the Lens Cap

Before you start recording, remove the Lens Cap.

1 You can attach the removed Lens Cap to the Grip Belt.
When not actually recording, always attach the Lens Cap to the Lens to protect it.

Adjusting the Grip Belt

You can adjust the Grip Belt to the size of your hand.

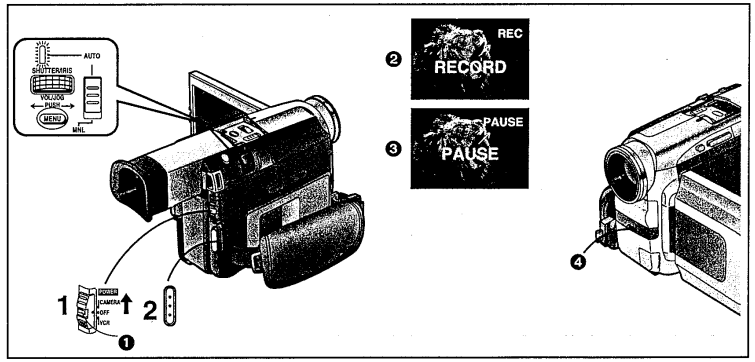
2 Open the Grip Belt Cover and adjust the length of the Grip Belt.

Attaching the Shoulder Strap

Before you go recording outside, we recommend that you attach the Shoulder Strap to prevent the Movie Camera from dropping accidentally.

3 Pull the end of the Shoulder Strap through the Shoulder Strap Holder on the Movie Camera.

4 Fold the end of the Shoulder Strap back, pull it first through the loop and then the Shoulder Strap Length Adjuster.
Pull it out more than 2 cm ❶ from the Shoulder Strap Length Adjuster so that it cannot slip off.



Recording

After setting the [POWER] Switch to [CAMERA] and the Mode Selector Switch to [AUTO], you can simply press the Start/Stop Button to start recording. In this case, the Movie Camera adjusts the focus and white balance fully automatically.
- Depending on the light source and recording situation, correct automatic focusing and white balance adjustment may not be possible. In such cases, adjust them manually.
  Focus: (➔ 84); White Balance: (➔ 80, 82)

1 Set the [POWER] Switch to [CAMERA].
While pressing the centre button ❶, slide the switch to [CAMERA].

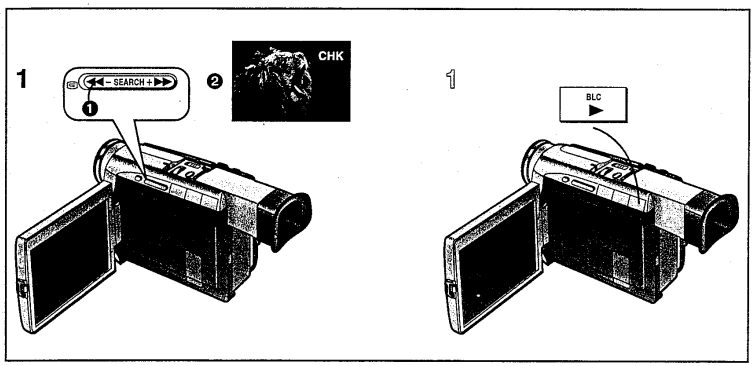
2 Press the Start/Stop Button.
Recording starts.
The [RECORD] Indication appears briefly and then changes to [REC] ❷.

To pause recording:
Press the Start/Stop Button again.
The [PAUSE] Indication appears. ❸

To finish recording:
Set the [POWER] Switch to [OFF].
It is not necessary to press the centre button in order to slide the switch to [OFF].

- **If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. To resume recording from this condition, set the [POWER] Switch to [OFF] and then to [CAMERA] again.**

Recording Lamp (Tally Lamp)
The Recording Lamp lights ❹ during recording to let the people in front of the Movie Camera know that recording is being performed.
If you set [REC LAMP] on the [CAMERA MENU3] Menu to [OFF], the Recording Lamp does not light.



Checking If the Picture Is Recorded
(Recording Check)

To play back the final few seconds of the last recorded scene in the Recording Pause Mode.

1 Press the Recording Check Button [⟲] ❶ briefly in the Recording Pause Mode.

The [CHK] Indication ❷ appears.
After checking, the Movie Camera returns to the Recording Pause Mode.

- For Recording Check, the Movie Camera must be in the same mode (SP or LP) as used for recording, otherwise the playback picture is distorted.

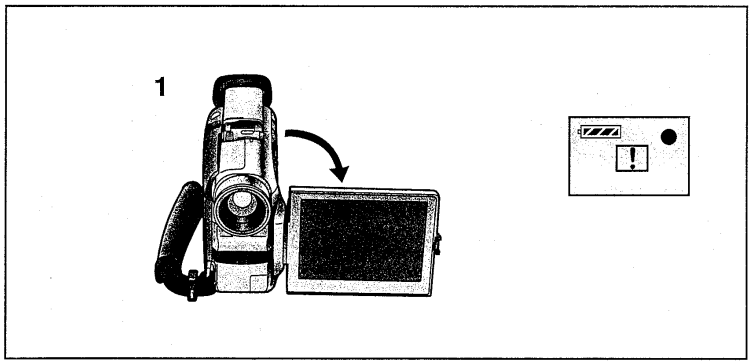
Recording Backlit Scenes
(Backlight Compensation)

To prevent the backlit subject from being recorded very dark.
(Backlight means that the light falls on the subject from behind, i.e. the subject is between the light source and the Movie Camera.)

1 Keep the Backlight Button [BLC] pressed.

The backlight is being compensated as long as you keep the Button pressed, and the subject is recorded more brightly. (The picture brightens up as a whole.)

Returning to Normal Recording
Release the Backlight Button [BLC].



Recording Yourself
(Recording with the LCD Monitor Facing Forward)

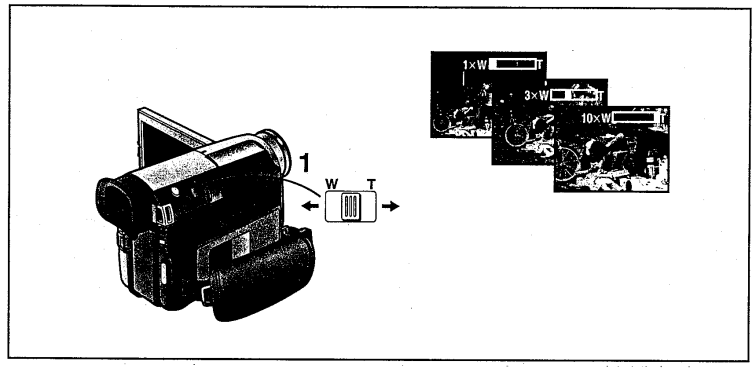
This makes it possible to record yourself while viewing the picture on the LCD Monitor or to show the persons in front of the Movie Camera the picture being recorded.

1 Open the LCD Monitor and turn it so that it faces forward (lens side).
Opening the LCD Monitor automatically turns off the Finder. However, when you turn the LCD Monitor forward, the picture also appears in the Finder.
This lets you aim the Movie Camera and view the picture in the Finder, while the persons in front of the Movie Camera can check the picture on the LCD Monitor during recording.

Mirror Mode
If you set [SELFSHOOT] on the [CAMERA MENU3] Menu to [MIRROR], the picture displayed on the LCD Monitor is reversed liked a mirror-image. When recording yourself with the LCD Monitor facing forward, the picture as it is being recorded might look unusual. We usually look at ourselves in the mirror and, although the image we see there is actually reversed right and left, it feels more natural because we are used to it. This Movie Camera features the Mirror Mode which displays the picture as a mirror-image.
However, even if you have selected the Mirror Mode, the picture is recorded in the normal way.

- In the Mirror Mode, only the following indications are displayed.
  ●: Recording
  ●II: Recording Pause
  ▭: Remaining Battery Power

When the General Warning/Alarm Indication [⚠] appears, turn the LCD Monitor backward so that you can confirm the actual Warning/Alarm Indication.

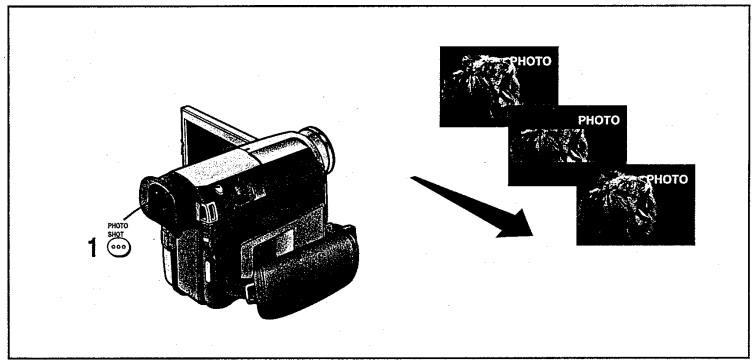


Enlarging Your Subject or Widening the Recording Angle
(Zooming In/Out)
Recording close-ups of your subjects and recording wide-angle shots add special effects to your videos.

1 To record a wider view (Zooming-out): Push the [W/T] Zoom Lever toward [W]. To enlarge your subject (Zooming-in): Push the [W/T] Zoom Lever toward [T].
- The Zoom Magnification Indication appears for a few seconds.
- The farther you push the [W/T] Zoom Lever toward [W] or [T], the faster the zooming speed becomes.
- During recording, the zooming speed is lower than during recording pause.

Enlarging Your Subjects Even More (Digital Zooming)
If you set [EFFECT1] on the [CAMERA MENU1] Menu to [& ZOOM] or [ZOOM], it is possible to further enlarge the subject. **(➔ 128)**
The [D.ZOOM] Indication appears.
- **20×**: Digital zooming up to 20×.
- **100×**: Digital zooming up to 100×.
- Up to 10×, the Zoom Magnification is done optically.
- The higher the Digital Zoom Magnification is, the lower is the picture quality.
- For the item [D.ZOOM] on the [CAMERA MENU1] Menu, you can select either [20×] or [100×] as the maximum zoom magnification.

Recording Extra Close-up Shots of Small Subjects (Macro Close-up Function)
When the zoom magnification is 1×, the Movie Camera can focus on subjects down to a distance of approximately 30 mm between lens and subject. This allows recording very small subjects such as insects.
- When you have zoomed to the tele setting, precise focusing is only possible on subjects no closer than 1.2 metres.



Using the Movie Camera as a Digital Still Camera (Photoshot)

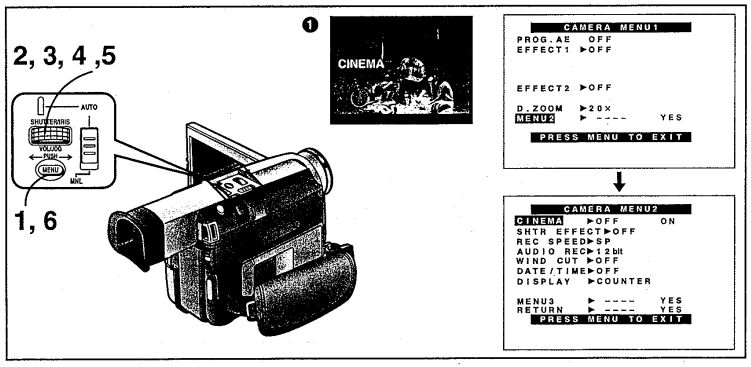
With this function, you can record still pictures with sound for approximately 7 seconds each.
This function is convenient for example for pictures that you want to print on a Video Printer.

1 Press the [PHOTO SHOT] Button. (This function can be used during recording, too.)
The Movie Camera records a still picture for approximately 7 seconds and then switches over to the Recording Pause Mode.

- If you set [SHTR EFFECT] on the [CAMERA MENU2] Menu to [ON], the screen blinks briefly and a simulated shutter click sound can be heard when you press the [PHOTO SHOT] Button. This audiovisual effect is also recorded.
- With the still pictures that you have recorded in the Photoshot Mode, you can do the following:
  - Index Search (➔ 60, 62)
    (However, searching for the picture(s) recorded at the beginning of the tape may not be possible.)
  - Automatic printing (➔ 120)
- The visual shutter effect and click sound may occur with slight delay after recording of the still picture has started.)
- The picture quality deteriorates slightly.

Continuous Photoshot
If you set [SHTR EFFECT] on the [CAMERA MENU2] Menu to [ON] and keep the [PHOTO SHOT] Button pressed (either in the Recording Pause Mode or during recording), the Movie Camera automatically records still pictures successively at intervals of approximately 0.7 second until you release the button.

- One more still picture may be recorded after you release the [PHOTO SHOT] Button.
- As the still pictures recorded in the Continuous Photoshot Mode are not marked with photoshot index signals, they cannot be located by using the Photoshot Index Search Function and printed with the Auto Print Function.



Recording in the Cinema Mode (Cinema Mode)

This mode lets you record in the cinema-like wide-screen format.

1 Press the [MENU] Button.
The [CAMERA MENU1] Menu appears.

2 Turn the [PUSH] Dial to select [MENU2].

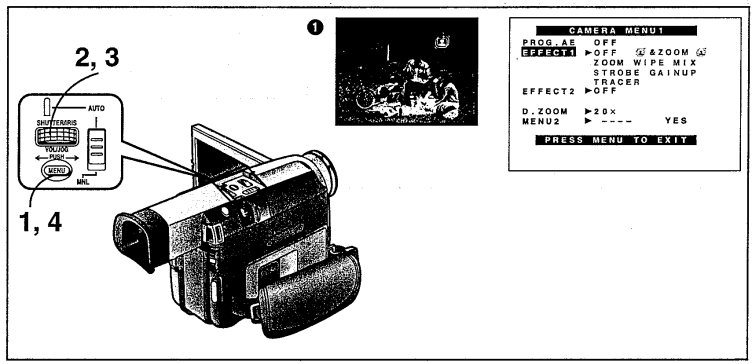
3 Press the [PUSH] Dial to select [YES].
The [CAMERA MENU2] Menu appears.

4 Turn the [PUSH] Dial to select [CINEMA].

5 Press the [PUSH] Dial to select [ON].
Black bars appear at the top and bottom on the screen. ❶

6 Press the [MENU] Button to exit the Menu.

Cancelling the Cinema Mode
Set [CINEMA] on the [CAMERA MENU2] Menu to [OFF].



Recording with Minimised Camera Shake (Super Image Stabilizer)

In recording situations where shaking of the Movie Camera is likely to happen, for example when you have zoomed in on a distant subject or when you record while walking, you can use this function to stabilize the image.

- In case of very strong camera shake, it may not be possible to stabilize the picture.

1 Press the [MENU] Button.
The [CAMERA MENU1] appears.

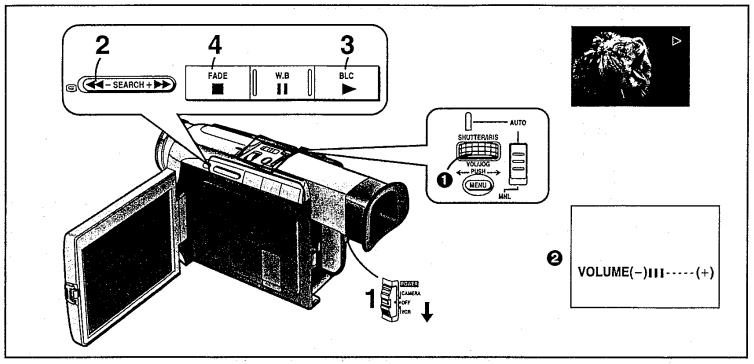
2 Turn the [PUSH] Dial to select [EFFECT1].

3 Press the [PUSH] Dial to select [& ZOOM] or [ ].

4 Press the [MENU] Button to exit the Menu.
The [ ] Indication ❶ appears.

- In a dimly lit place, the Super Image Stabilizer Function may not work. In this case, the [ ] Indication flashes.
- Under fluorescent lamps, the picture brightness may fluctuate and the colours may be unnatural.
- After-image distortion may occur.
- When you use a tripod, we recommend to turn the Super Image Stabilizer Function off.

Cancelling the Super Image Stabilizer Function
Set [EFFECT1] on the [CAMERA MENU1] Menu to [OFF].



Viewing the Just Recorded Scenes on the Movie Camera (Playback)

You can play back recorded scenes right after recording.

1 Set the [POWER] Switch to [VCR].
- While pressing the centre button, slide the switch to [VCR].

2 Press the Rewind Button [◀◀] to rewind the tape.
- Rewind the tape to the point where the recording started.
- If the tape reaches the beginning, rewinding automatically stops.

3 Press the Play Button [▶] to start playback.

4 To stop playback:
Press the Stop Button [■].

■ Adjusting the Sound Volume

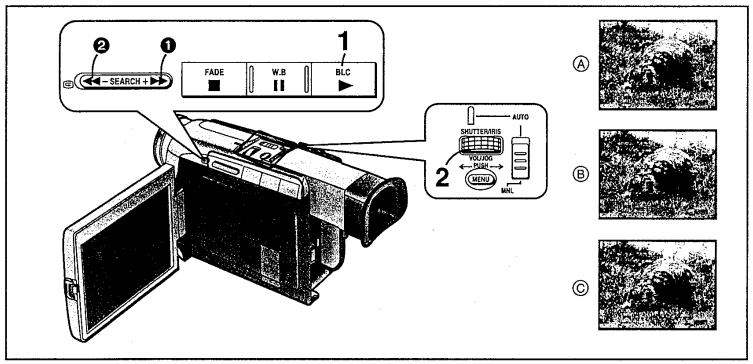
Keep the [PUSH] Dial ❶ pressed until the [VOLUME] Indication ❷ appears. Then, turn the [PUSH] Dial to adjust the volume. After adjusting, press the [PUSH] Dial to make the [VOLUME] Indication disappear.
To adjust the volume with the Remote Controller, press the [T] or [W] Button to make the [VOLUME] Indication appear. You can then increase the volume by pressing the [T] Button or decrease it by pressing the [W] Button. A few seconds after finishing the adjustment, the [VOLUME] Indication disappears.

■ Repeat Playback

- If you keep the Playback Button [▶] pressed for more than 5 seconds, the Movie Camera switches over to the Repeat Playback Mode and the [R ▷] Indication appears. To cancel the Repeat Playback Mode, set the [POWER] Switch to [OFF].
- If a cassette recorded with copyright protection signal is played back, the screen becomes black.

Making the Date/Time Indication Appear

This Movie Camera automatically records the date and time, however not directly in the picture but as part of the sub code (➔ 156).
To make the Date/Time Indication appear, set [DATE/TIME] on the [VCR MENU1] Menu to the desired setting.



Searching for a Scene That You Want to Play Back

Cue Playback Ⓐ

Keep the Cue Button [▶▶] ❶ pressed during playback.

Review Playback Ⓑ

Keep the Review Button [◀◀] ❷ pressed during playback.

Search Lock Function

For longer Cue or Review Playback, press the Cue Button [▶▶] or the Review Button [◀◀] only briefly. As this locks the search function, you do not need to keep the button pressed for a long time.

- To resume normal playback, press the Play Button [▶].
- In Cue and Review Playback, pictures with fast-moving subjects may contain mosaic-like patterns.

Hyper Check Function

- If you press the Fast-forward Button [▶▶] during fast-forwarding of the tape or the Rewind Button [◀◀] during rewinding of the tape, Cue Playback or Review Playback continues for as long as you keep the Button pressed.
- At the beginning and end of Cue Playback or Review Playback, some momentary picture distortion may occur.

Variable Speed Search Function Ⓒ

It is possible to change the speed of Cue Playback or Review Playback.

1 Press the Play Button [▶] during playback.

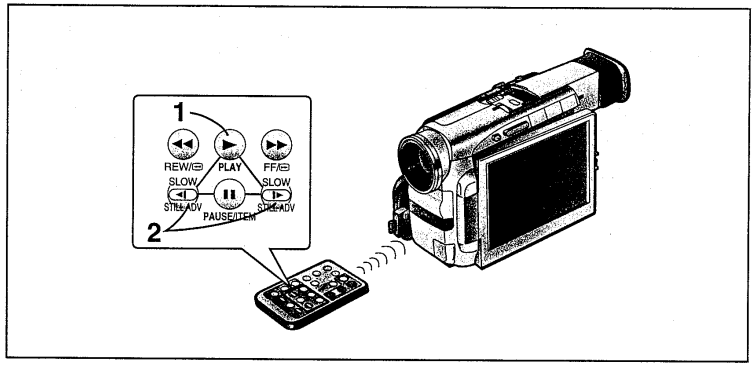
2 Turn the [PUSH] Dial to select the desired search speed.

The Variable Speed Search function offers a choice of five playback speeds (1×, 2×, 5×, 10×, 20×) both in forward direction and reverse direction.

Returning to Normal Playback

Press the Play Button [▶]. Playback continues at normal speed.

- During Variable Speed Search (except at 1× speed in forward direction), mosaic-like patterns appear in the picture.
- When using the Variable Speed Search Function, the sound is muted.



Playing Back in Slow Motion

(Slow Motion Playback)

1 Press the Play Button [▶].

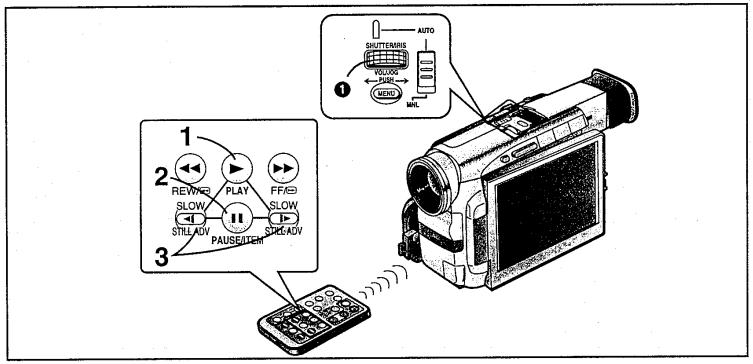
2 Press the Slow Motion/Still Advance Button [◂I] or [I▸] on the Remote Controller.
Pressing the [◂I] Button starts slow motion playback in reverse direction, and pressing the [I▸] Button starts slow motion playback in forward direction.

Scenes recorded in the SP Mode are played back at approximately 1/5th of the normal speed.
Scenes recorded in the LP Mode are played back at approximately 1/3rd of the normal speed.

- During slow motion playback in reverse direction, the Time Code Indication may not be accurate.

Resuming Normal Playback

Press the Play Button [▶].
Playback continues with normal speed.



Playing Back Still Pictures and Advancing Them One by One

(Still Playback/Still Advance Playback)

You can freeze the action during playback and advance the still pictures one by one.

1 **Press the Play Button [►].**

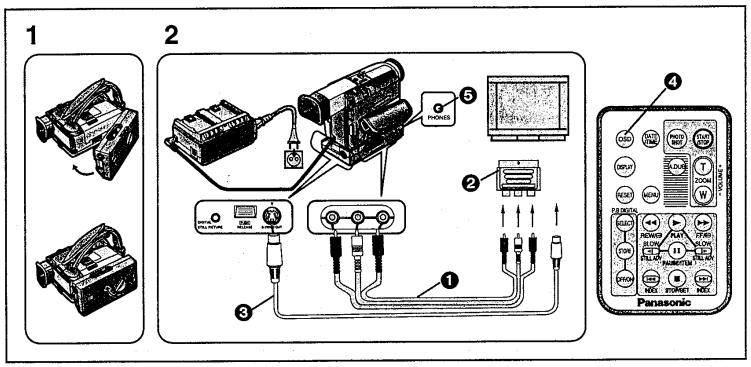
2 **Press the Pause Button [❚❚].**
The playback picture stops in the Still Playback Mode.

3 **Press the Slow Motion/Still Advance Button [◄] or [►] on the Remote Controller.**
Pressing the [◄] Button advances the still picture frame by frame in reverse direction. Pressing the [►] Button advances the still picture frame by frame in forward direction.

- Each press of the [◄] Button advances to the next still picture in reverse direction. Each press of the [►] Button advances to the next still picture in forward direction. Keeping either button pressed continuously advances the still picture frame by frame until you release the button.
- If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.
- During Still Advance Playback, the Time Code Indication may not be accurate.

Resuming Normal Playback
Press the Play Button [►].
Playback continues with normal speed.

Using the Jog Dial (Jog Playback)
By turning the Jog Dial ([PUSH] Dial) ❶ on the Movie Camera in the Still Playback Mode, you can advance the still pictures one by one in forward or reverse direction.



Playing Back on a TV

(With the Output Terminal Box [AV ONE TOUCH STATION] Attached)

Attaching the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera makes it possible to play back recorded scenes on a TV.

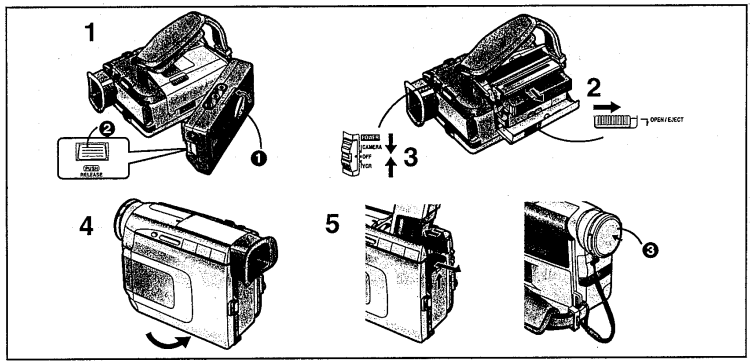
1 **Attach the Output Terminal Box [AV ONE TOUCH STATION].** **(→ 110)**

2 **Connect the Video and Audio Output Sockets to the Video and Audio Input Sockets on the TV.**
Use the AV Cable ❶ and 21-pin Adaptor ❷ to connect to the TV. If your TV is equipped with an S-Video Socket, also connect the S-Video Cable ❸.

- Before connecting, turn off both the Movie Camera and the TV.
- If a cassette recorded with copyright protection signal is played back, the screen becomes black. However, scenes recorded with this Movie Camera do not contain a copyright protection signal.

Making the Indications Appear on the TV Screen
Press the [OSD] Button ❹ on the Remote Controller. The On-Screen Indications also appear on the TV screen.

Listening to the Playback Sound via Headphones
If you want to use headphones to listen to the playback sound, connect them to the [PHONES] Socket ❺ on the Output Terminal Box [AV ONE TOUCH STATION]. In this case, no sound is reproduced from the Movie Camera's built-in speaker, and the volume of the playback sound cannot be adjusted.



After Use

1 **Loosen the locking screw ❶ and remove the Output Terminal Box [AV ONE TOUCH STATION] while pressing the [PUSH RELEASE] Button ❷.**
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

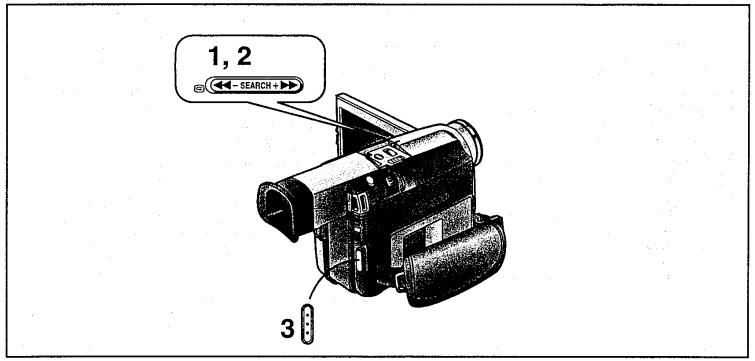
2 **Take out the cassette.** **(→ 22)**

3 **Set the [POWER] Switch to [OFF].**
It is not necessary to press the centre button in order to slide the switch to [OFF].

4 **Close the LCD Monitor.**

5 **Remove the Battery and retract the Finder.** **(→ 18)**

Attaching the Lens Cap
After use, attach the supplied Lens Cap ❸ to the Lens to protect it.



Viewing Recorded Scenes During Recording Pause (Camera Search)

You can view recorded scenes when the Movie Camera is in the Recording Pause Mode.
The Camera Search Function is convenient to search for a scene from which you want to start recording a new scene with smooth scene-to-scene transition.

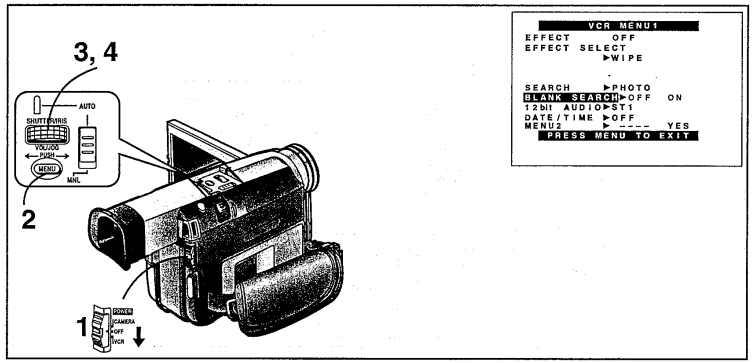
1 Keep the Reverse Search Button [– SEARCH] or the Forward Search Button [SEARCH +] pressed for more than 1 second.
Pressing the [– SEARCH] Button plays back the picture in reverse direction.
Pressing the [SEARCH +] Button plays back the picture in forward direction.

Starting to Record from the Desired Position

2 Release the pressed Search Button.
The Movie Camera is in the Recording Pause Mode.

3 Press the Start/Stop Button to start recording.
The Movie Camera starts recording a new scene with smooth scene-to-scene transition.

- In the Camera Search Mode, the picture may contain mosaic-like patterns. However, this is a phenomenon particular to digital video and completely normal.
- If the Recording Speed Mode (SP/LP) of the previous and the new recording are different, the playback picture may be distorted.



Searching for the End of the Recorded Part on a Cassette
(Blank Search)

With the Blank Search Function, you can quickly locate the end of the recorded part on a cassette (or a blank part between recordings).

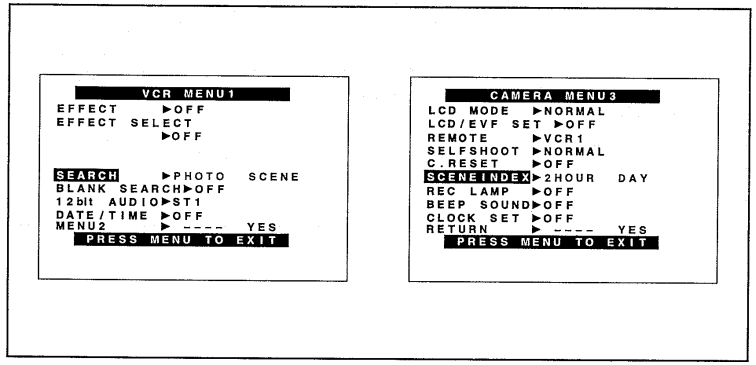
1 Set the [POWER] Switch to [VCR].
While pressing the centre button, slide the switch to [VCR].

2 Press the [MENU] Button.
The [VCR MENU1] Menu appears.

3 Turn the [PUSH] Dial to select [BLANK SEARCH].

4 Press the [PUSH] Dial to select [ON].
Approximately 1 second before the end of the last recorded scene, the Movie Camera switches over to the Still Playback Mode.

- If there is no blank part on a cassette, the Movie Camera stops at the end of the tape.
- If you set the [POWER] Switch to [CAMERA] and then start recording after the Blank Search has finished, the new scene will be joined to the end of the last recorded scene with a smooth transition.



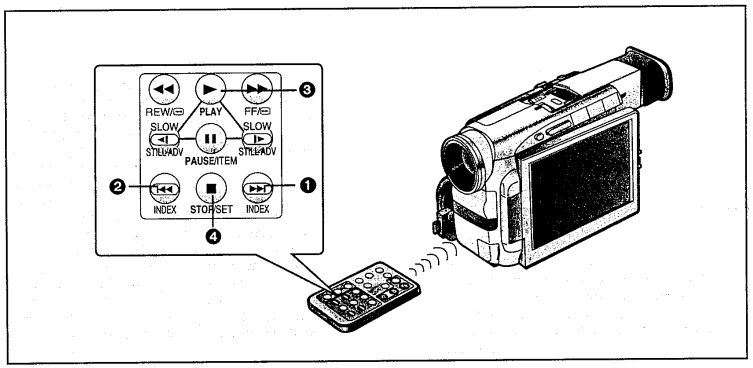
Searching for the Beginning of Recorded Scenes Marked with Index Signal
(Index Search)

To allow easy searching for desired scenes, this Movie Camera automatically records index signals during recording as follows:

❶ Photoshot Index Signal
To search for still pictures recorded in the Photoshot Mode (➔ 38) and to use for automatic printing (➔ 120).
A photoshot index signal is automatically recorded every time you record a still picture in the Photoshot Mode.
- However, in the Continuous Photoshot Mode (➔ 38), no photoshot index signals are recorded.

❷ Scene Index Signal
To search for the beginning of recorded scenes.
A scene index signal is automatically recorded in the following cases:
- When you start recording after inserting a cassette.
- According to the setting of [SCENEINDEX] on the [CAMERA MENU3] Menu:
  [2HOUR]: An index signal is recorded when recording is restarted after a lapse of more than 2 hours.
  [DAY]: An index signal is recorded when recording is restarted after the date has changed since the last recording.

(While an index signal is being recorded, the [INDEX] Indication flashes for a few seconds.)



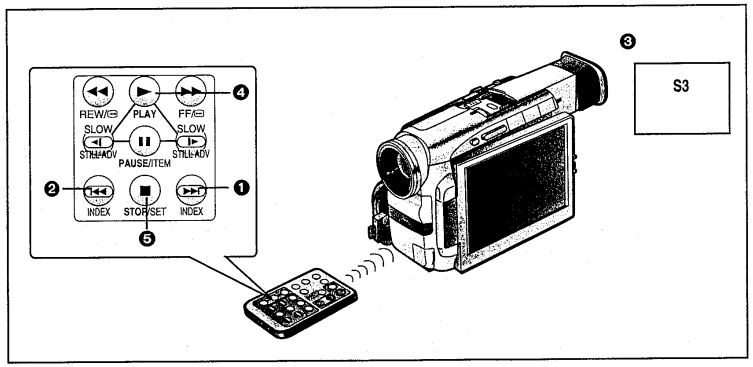
Searching for Photoshot Pictures (Photoshot Index Search)

- Set the [POWER] Switch to [VCR].
- Set [SEARCH] on the [VCR MENU1] Menu to [PHOTO].

Photoshot Index Search in Forward Direction
Press the Index Button [▶▶I] ❶ on the Remote Controller.

Photoshot Index Search in Reverse Direction
Press the Index Button [I◀◀] ❷ on the Remote Controller.

- At every press of the corresponding button, the tape is fast-forwarded or rewound to the next still picture recorded in the Photoshot Mode.
  After reaching the next still picture, the still picture is played back continually, however the sound only for approximately 4 seconds. (If you leave the Movie Camera in the Still Playback Mode for more than 6 minutes, it switches over to the Stop Mode to protect the video heads against excessive wear.)
- The Photoshot Index Search may not work correctly for still pictures recorded near the beginning of the tape.
- As no photoshot index signals are recorded for still pictures recorded in the Continuous Photoshot Mode (→ 38), the Photoshot Index Search Function cannot be used to search for these still pictures.
- If you keep the [I◀◀] or [▶▶I] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back all still pictures recorded in the Photoshot Mode on the cassette one after another for a few seconds each.
  (To cancel the Intro Search Function, press the Play Button [▶] ❸ or the Stop Button [■] ❹.)



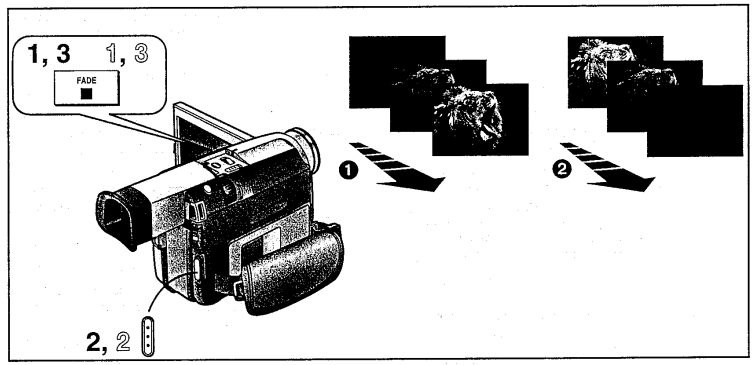
Searching for the Beginning of Recorded Scenes (Scene Index Search)

- Set the [POWER] Switch to [VCR].
- Set [SEARCH] on the [VCR MENU1] Menu to [SCENE].

Scene Index Search in Forward Direction
Press the Index Button [▶▶I] ❶ on the Remote Controller.

Scene Index Search in Reverse Direction
Press the Index Button [I◀◀] ❷ on the Remote Controller.

- When you briefly press the corresponding button once, the [S1] Indication appears and the search for the next scene marked with an index signal starts. After the Scene Index Search has started, every time you press the button, the indication changes successively from [S2] to [S9], and the beginning of the scene corresponding to the selected number is located. ❸ After reaching the desired scene, playback starts automatically. (At a time, Scene Index Search in forward or reverse direction is possible up to the ninth scene marked with index signal from the present tape position.)
- If the interval between two scene index signals is less than 1 minute, the Scene Index Search may not work correctly.
- The Scene Index Search may not work correctly for scenes recorded near the beginning of the tape.
- If you keep the [I◀◀] or [▶▶I] Button pressed for more than 2 seconds, the Intro Search Function is activated and it plays back the beginning of all scenes marked with an index signal on the cassette one after another for a few seconds each.
  (To cancel the Intro Search Function, press the Play Button [▶] ❹ or the Stop Button [■] ❺.)



Fading In/Out

Fading In ❶
Fading-in lets you make the picture and sound appear gradually from a black screen at the beginning of a scene.

1 **With the Movie Camera in the Recording Pause Mode, keep the Fade Button [FADE] pressed.**
The picture gradually disappears.

2 **When the picture has completely disappeared, press the Start/Stop Button to start recording.**

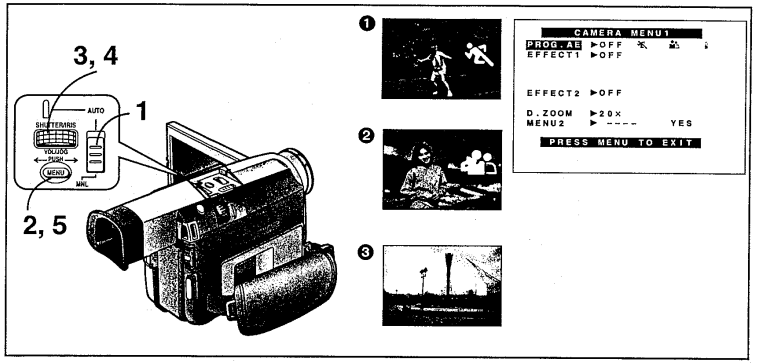
3 **Approximately 3 seconds after the recording has started, release the Fade Button [FADE].**
The picture gradually appears again.

Fading out ❷
Fading-out lets you make the picture and sound disappear gradually into a black screen at the end of a scene.

1 **During recording, keep the Fade Button [FADE] pressed.**
The picture gradually disappears.

2 **After the picture has completely disappeared, press the Start/Stop Button to stop recording.**
The Movie Camera is in the Recording Pause Mode.

3 **Release the Fade Button [FADE].**



Recording In Special Situations
(Programme AE)

This function lets you select Automatic Exposure settings optimized for special recording situations.

1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

2 **Press the [MENU] Button.**
The [CAMERA MENU1] Menu appears.

3 **Turn the [PUSH] Dial to select [PROG.AE].**

4 **Press the [PUSH] Dial to select the desired mode ([ ], [ ] or [ ]).**

5 **Press the [MENU] Button to exit the Menu.**
The indication of the selected mode appears.

[ ] Sports Mode ❶
To record scenes with fast-moving subjects such as sports scenes.

[ ] Portrait Mode ❷
To make subjects stand out sharply from the background.

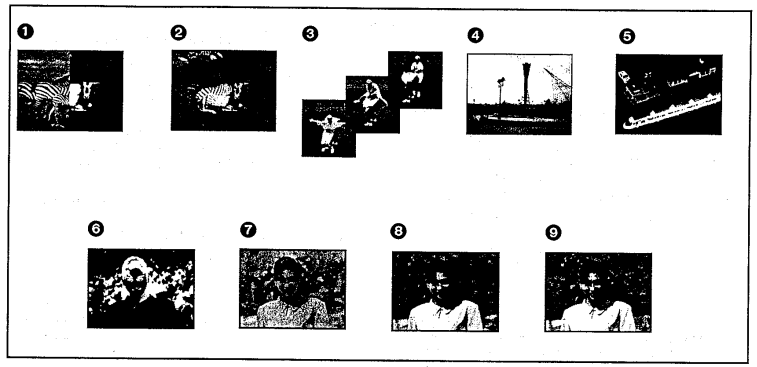
[ ] Low Light Mode ❸
To record dark scenes more brightly.

Cancelling the Programme AE Function
Set [PROG.AE] on the [CAMERA MENU1] Menu to [OFF]. Or set the Mode Selector Switch to [AUTO].

Sports Mode
- When playing back scenes recorded in the Sports Mode, you can enjoy slow motion and still playback of very sharp images with fine details.
- Avoid recording under fluorescent, mercury-vapour or natrium lamps in this mode, as the colour and the brightness of the playback picture might fluctuate.
- When recording subjects lit by strong lights or with much light reflection, the playback picture may contain vertical streaks of light.
- When the scene is not sufficiently lit, the [ ] Indication flashes.
- When using this mode for recording indoors, the playback picture may flicker.
- It is not possible to select the Sports Mode [ ] together with the Gain-up Mode [GAINUP] on the [CAMERA MENU1] Menu.

Portrait Mode
- When using this mode for recording indoors, the playback picture may flicker.
- It is not possible to select the Portrait Mode [ ] together with the Gain-up Mode [GAINUP] on the [CAMERA MENU1] Menu.

Low Light Mode
- It may not be possible to sufficiently brighten up extremely dark scenes.



Recording with Special Effects
(Digital Effects)

There are 9 different modes available for adding special digital picture effects.

Digital Effects 1 [EFFECT1]

❶ **Wipe Mode [WIPE]**
It gradually replaces a picture of the last previously recorded scene with the picture of the new scene, like drawing a curtain. For details, **(→ 76)**.

❷ **Mix Mode [MIX]**
It gradually fades out the picture of the last previously recorded scene while fading in the picture of the new scene. For details, **(→ 78)**.

❸ **Strobe Mode [STROBE]**
It records the pictures with a stroboscope-like effect.

❹ **Gain-up Mode [GAIN UP]**
It electronically brightens up the picture.
In this mode, adjust the focus manually.

❺ **Trailing Effect Mode [TRACER]**
The picture is recorded with a trailing effect.
If you record in the Continuous Photoshot Mode **(→ 38)**, only the first still picture has this effect.

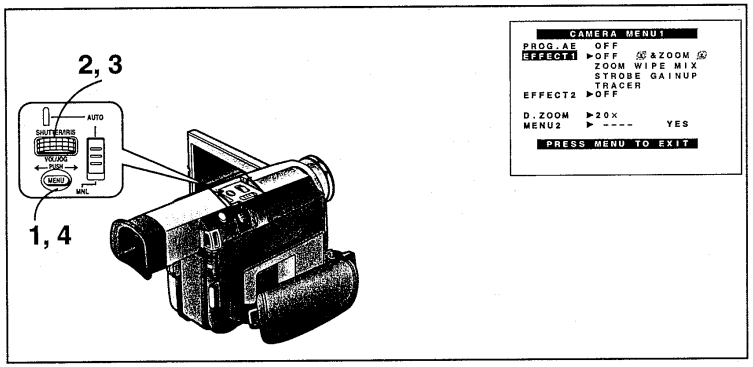
Digital Effects 2 [EFFECT2]

❻ **Negative/Positive Mode [NEGA]**
The recorded pictures have reversed colours similar to photographic negatives.

❼ **Sepia Mode [SEPIA]**
Scenes are recorded with a brown tint similar to the colour of old photographs.

❽ **Black & White Mode [B/W]**
The picture is recorded in black and white.

❾ **Solarisation Mode [SOLARI]**
The picture is recorded with an effect similar to a painting.



Recording with Special Effects
(Digital Effects) (Continued)

Selecting the Desired Digital Effect

1 **Press the [MENU] Button.**
The [CAMERA MENU1] Menu appears.

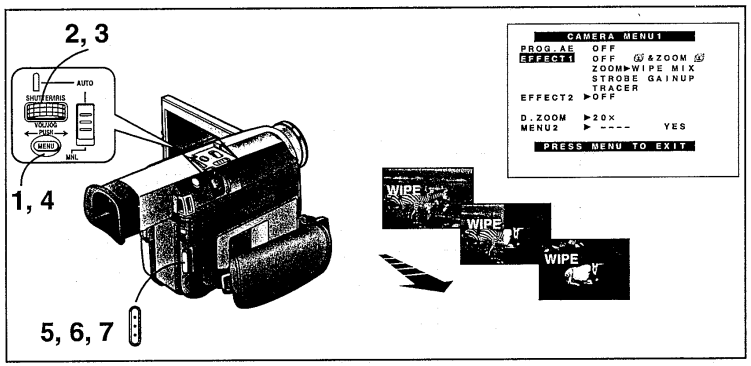
2 **Turn the [PUSH] Dial to select [EFFECT1] or [EFFECT2].**

3 **Press the [PUSH] Dial to select the desired digital effect.**

4 **Press the [MENU] Button to exit the Menu.**
- The picture now has the selected digital effect. However, the effect of the Wipe Function and the Mix Function only become visible when actually recording in the respective mode. **(→ 76, 78)**

- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP], you need to adjust the focus manually; however, adjusting the shutter speed and selecting a white balance mode are not possible.
- If you have set [EFFECT2] on the [CAMERA MENU1] Menu to [B/W] or [SEPIA], changing the selected white balance mode is not possible.
- It is not possible to select the Sports Mode [ ] or the Portrait Mode [ ] together with the Gain-up Mode [GAINUP] on the [CAMERA MENU1] Menu.

Cancelling the Digital Effect
Set [EFFECT1] or [EFFECT2] on the [CAMERA MENU1] Menu to [OFF].



Recording with Special Effects
(Digital Effects) (Continued)

■ Wipe Mode
It gradually replaces a still picture of the last recorded scene with the moving picture of the new scene, like drawing a curtain.

1 **Press the [MENU] Button.**
The [CAMERA MENU1] Menu appears.

2 **Turn the [PUSH] Dial to select [EFFECT1].**

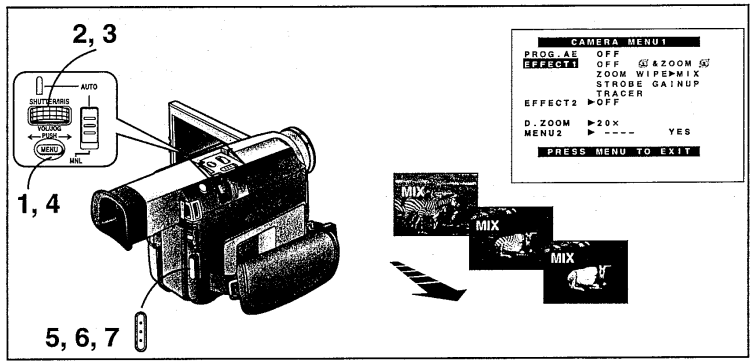
3 **Press the [PUSH] Dial to select [WIPE].**

4 **Press the [MENU] Button to exit the Menu.**
The [WIPE] Indication appears.

5 **Press the Start/Stop Button to start recording.**
The normal recording starts.

6 **Press the Start/Stop Button to pause recording.**
The last picture is stored in memory.
The [WIPE] Indication changes to [WIPE].

7 **Press the Start/Stop Button to start recording again.**
The last picture of the previous scene is gradually replaced by the new scene.



Recording with Special Effects
(Digital Effects) (Continued)

■ Mix Mode
It gradually fades out a still picture of the last recorded scene while fading in the moving picture of the new scene.

1 **Press the [MENU] Button.**
The [CAMERA MENU1] Menu appears.

2 **Turn the [PUSH] Dial to select [EFFECT1].**

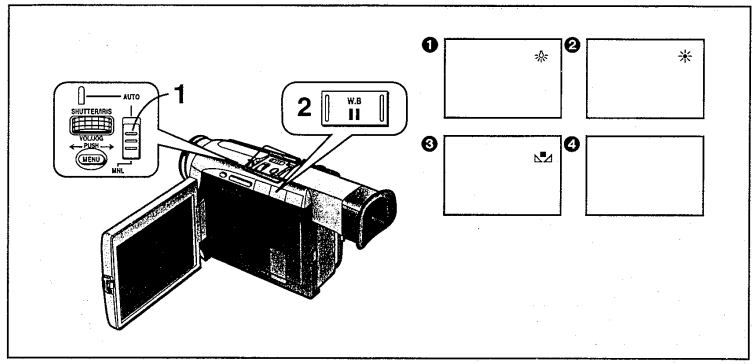
3 **Press the [PUSH] Dial to select [MIX].**

4 **Press the [MENU] Button to exit the Menu.**
The [MIX] Indication appears.

5 **Press the Start/Stop Button to start recording.**
The normal recording starts.

6 **Press the Start/Stop Button to pause recording.**
The last picture is stored in memory.
The [MIX] Indication changes to [MIX].

7 **Press the Start/Stop Button to start recording again.**
The last picture gradually fades out while the new scene fades in.



Recording with Natural Colours
(White Balance)

This Movie Camera automatically adjusts the white balance to ensure that the pictures are recorded with natural colours. For certain types of subjects and lighting conditions, however, this Auto White Balance Adjustment Mode may not be able to ensure natural colours **(➔ 162, 164)**. In these cases, you can select either one of the 3 preset modes explained below (indoor, outdoor, or the last manually adjusted white balance setting), or you can manually adjust the white balance **(➔ 82)**.

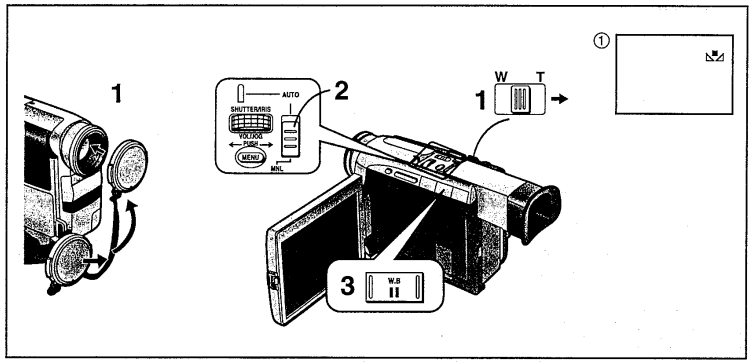
1 Set the Mode Selector Switch to [MNL].
The [MNL] Indication appears.

2 Press the White Balance [W.B] Button.
Repeatedly press the [W.B] Button to select the desired White Balance Mode.

The modes change in the following order:
❶ Indoor Mode
(recording under incandescent lamp) (☆)
❷ Outdoor Mode (☼)
❸ Last manually adjusted White Balance setting ([▪]) **(➔ 82)**
❹ Automatic White Balance Adjustment (no indication)

- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP] or you have set [EFFECT2] to [SEPIA] or [B/W], it is not possible to change the white balance mode.
- To change the white balance mode, the Movie Camera must be set within the optical zoom range (1× – 10×). If you try to change it in the digital zoom range, the [▪] Indication flashes.

Returning to the Auto White Balance Adjustment Mode
Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([☆], [☼], [▪]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].



Adjusting the White Balance Manually

Use the Manual White Balance Adjustment Mode for all types of lighting outside the range ❶ **(➔ 164)**, as the Auto White Balance Adjustment Mode can only ensure natural colours for the types of lighting within that range. For optimum results under almost any type of lighting, we recommend that you adjust the white balance manually for each new scene.

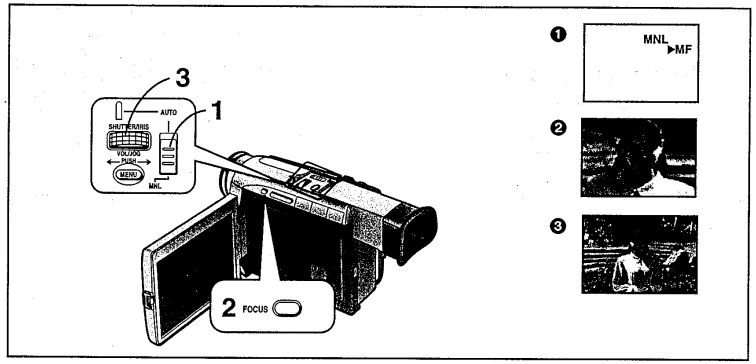
1 Attach the Lens Cap and zoom in until the entire screen becomes white.

2 Set the Mode Selector Switch to [MNL].
The [MNL] Indication appears.

3 Keep the [W.B] Button pressed until the [▪] Indication ① stops flashing and remains lit.

- The Manual White Balance Adjustment is now finished. If you want to use this setting again later on, for example after having used Automatic White Balance Adjustment, you can recall it by pressing the [W.B] Button 3 times. (In this case, the [▪] Indication flashes.)
- When the [▪] Indication remains flashing under weak illumination, the Manual White Balance Adjustment cannot be set manually.
- If you have set [EFFECT1] on the [CAMERA MENU1] Menu to [GAINUP], or you have set [EFFECT2] to [SEPIA] or [B/W], it is not possible to adjust the white balance.
- Adjusting the white balance is only possible when the Movie Camera is set within the optical zoom range (1x – 10x). If you try to adjust it in the digital zoom range, the [▪] Indication flashes.

Returning to the Auto White Balance Adjustment Mode
Press the [W.B] Button repeatedly until none of the White Balance Mode Indications ([☆], [☼], [▪]) are displayed any more. Or, set the Mode Selector Switch to [AUTO].



Focusing on the Subject Manually
(Manual Focus)

This makes it possible to adjust the focus manually for subjects and recording situations for which automatic focusing is not precise.

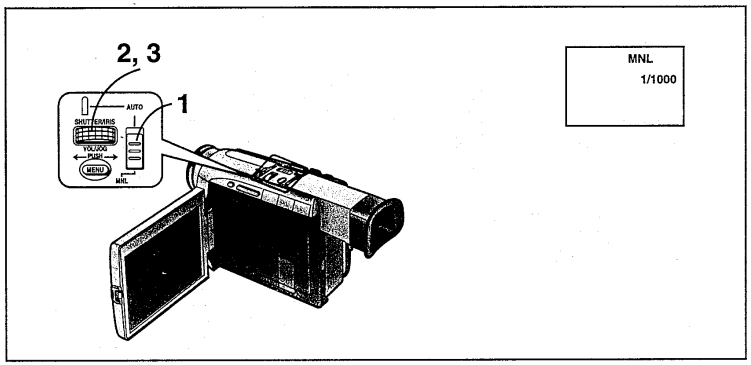
1 Set the Mode Selector to [MNL].
The [MNL] Indication appers.

2 Press the [FOCUS] Button.
The [▶MF] Indication ❶ appears.
MF; Manual Focus Mode

3 Turn the [PUSH] Dial until the subject is sharp.

Returning to the Automatic Focusing Mode
Press the [FOCUS] Button to make the [▶MF] Indication disappear. Or, set the Mode Selector Switch to [AUTO].

Hint for Manual Focus Adjustment
- If you adjust the focus in the wide-angle setting, the subject may go out of focus when you enlarge it. Therefore, enlarge the subject ❷ before you adjust the focus, so that the picture remains focused when you zoom out ❸.
- If you want to adjust the focus manually after having adjusted the shutter speed **(➔ 86)** or the iris **(➔ 88)**, be sure to press the [FOCUS] Button to make the [▶MF] Indication appear, even if the [MF] Indication is displayed.



Adjusting the Shutter Speed Manually

To achieve special creative effects or to cope with special lighting situations or fast-action scenes, you can adjust the shutter manually.

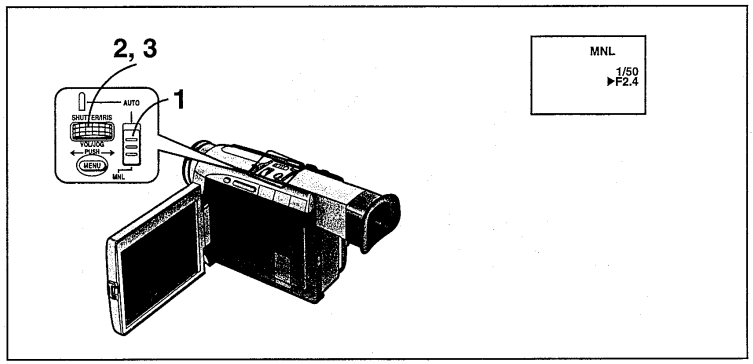
1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

2 **Press the [PUSH] Dial.**
The Shutter Speed Indication appears.
You can change between the Shutter Speed Indication and the Iris (F Number) **(➔ 88)** Indication by repeatedly pressing the [PUSH] Dial.

3 **Turn the [PUSH] Dial to adjust the shutter speed.**

Range of Shutter Speed Adjustment
1/50–1/8000 s
The standard shutter speed is 1/50 s.
The nearer to [1/8000] a setting you select, the faster the shutter speed becomes.

Returning to the Normal Shutter Speed
Set the Mode Selector Switch to [AUTO].



Adjusting the Iris (F Number) Manually

To achieve special creative effects or to cope with special lighting situations, you can adjust the iris (F number) manually.

1 **Set the Mode Selector Switch to [MNL].**
The [MNL] Indication appears.

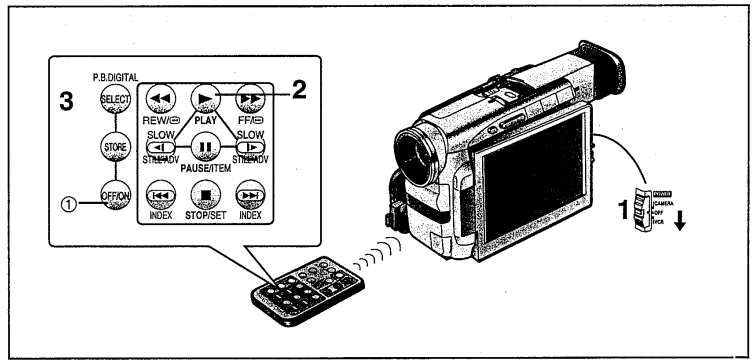
2 **Press the [PUSH] Dial twice.**
The [▶F] Indication appears.
You can change between the Iris (F Number) Indication and the Shutter Speed Indication by repeatedly pressing the [PUSH] Dial.

3 **Turn the [PUSH] Dial to adjust the iris.**

Range of Iris Adjustment
CLOSE (Closed) → F16...F1.7 → OP (Opened)
+0 dB...OP+18 dB
The nearer to [CLOSE] a value you select, the darker the picture becomes.
The nearer to [OP+18 dB] a value you select, the brighter the picture becomes.
The figures with +dB show the Gain-up value. If you increase the value too much, the picture quality deteriorates.

Returning to the Normal Iris Value (F Number)
Press the [PUSH] Dial one time to make the [▶F] Indication disappear. Or set the Mode Selector Switch to [AUTO].

- Manually adjusting the shutter speed after performing manual iris adjustment changes the iris back to automatic adjustment. Therefore, if you want to adjust both the shutter speed and iris manually, be sure to adjust the shutter speed first. **(➔ 86)**



Playing Back with Special Effects

(Playback Digital Effects)
There are 8 different modes available for adding special digital picture effects to your recordings during playback. They are identical to the Digital Effects 1 and 2 **(➔ 72)** that can be used during recording.

❶ WIPE
❷ MIX
❸ STROBE
❹ NEGA
❺ SEPIA
❻ B/W
❼ TRACER
❽ SOLARI

1 **Set the [POWER] Switch to [VCR].**

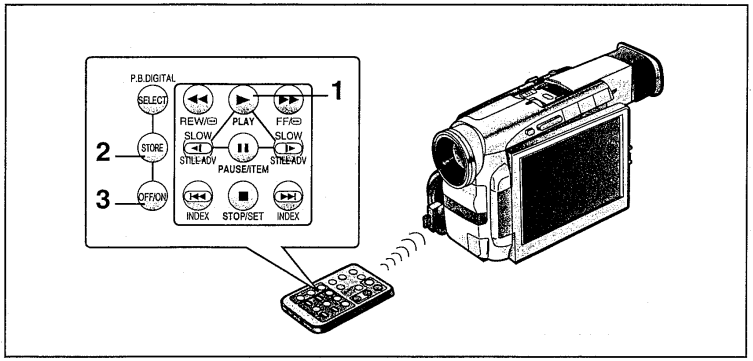
2 **Press the Play Button [▶].**

3 **Press the [SELECT] Button on the Remote Controller to select the desired digital effect.**
Repeatedly pressing the [SELECT] Button changes the selected digital effect in the order ❶ to ❽.
Selecting a digital effect is also possible by setting [EFFECT SELECT] on the [VCR MENU1] Menu to the desired effect.

Suspending the Playback Digital Effect Temporarily
You can suspend and re-activate the digital effect by repeatedly pressing the [OFF/ON] Button ①.
Suspending the digital effect is also possible by setting [EFFECT] on the [VCR MENU1] Menu to [OFF], and later to [ON] to re-activate it. When the digital effect is temporarily suspended, the indication of the selected effect flashes.

Cancelling the Digital Effect
Set [EFFECT SELECT] on the [VCR MENU1] Menu to [OFF].

- The signal of the picture with a digital effect added during playback cannot be output from the DV Terminal **(➔ 12)** or the Digital Still Picture Terminal. **(➔ 124)**.



Playing Back with Special Effects
(Playback Digital Effects) (Continued)

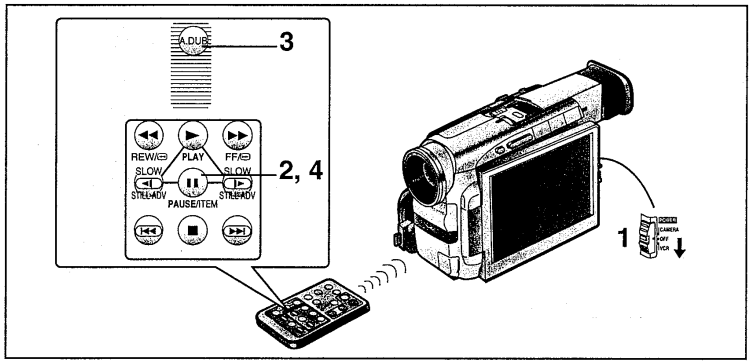
■ **Wipe Function and Mix Function**
After having selected [WIPE] or [MIX] in Step 3 on page 90:

1 Press the [▶] Button to start playback.

2 Press the [STORE] Button at the moment that you want to store as still image in memory.
The [WIPE] or [MIX] Indication appears and the picture is stored in memory.

3 Press the [OFF/ON] Button at the scene at which you want to use a Wipe or Mix effect.
The scenes change with a Wipe or Mix effect.

- Operating the Wipe Function and the Mix Function during playback is only possible with Remote Controller.
- It is not possible to add a Wipe or Mix effect during playback of an unrecorded part on the tape.
- If you press the [OFF/ON] Button while the Wipe or Mix is being performed, the effect is paused at that point. If you press the [OFF/ON] Button again, the effect resumes.



Adding New Sound on a Recorded Cassette (Audio Dubbing)

To perform audio dubbing, the Remote Controller is necessary.
You can add music or narration on a recorded cassette.

- If [AUDIO REC] on the [CAMERA MENU2] Menu has been set to [16bit], performing audio dubbing erases the previously recorded sound. (If you intend to perform audio dubbing but also want to keep the original sound, be sure to set [AUDIO REC] to [12bit] before making the original recording.)
- It is not possible to perform audio dubbing onto recordings made in the LP Mode. (➔ 24)

1 Insert the recorded cassette and set the [POWER] Switch to [VCR].

2 At the point from which you want to insert the new sound, switch the Movie Camera over to the Still Playback Mode.

3 Press the [A.DUB] Button on the Remote Controller.

4 Press the Pause Button [❚❚] on the Remote Controller to start audio dubbing.

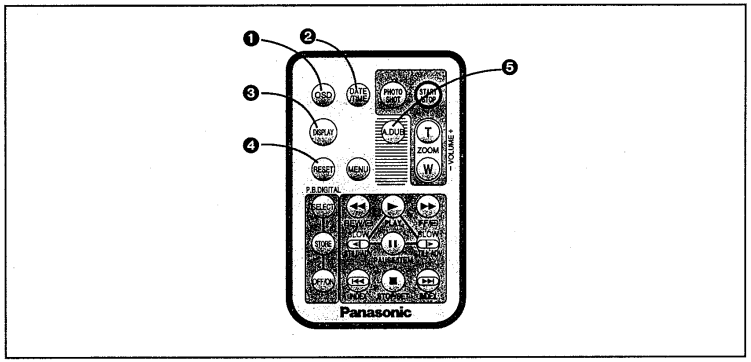
Stopping Audio Dubbing
Press the Pause Button [❚❚] on the Remote Controller. The Movie Camera is again in the Still Playback Mode.

Playing Back the Sound Recorded with Audio Dubbing

Depending on the setting selected for [12bit AUDIO] on the [VCR MENU1] Menu, the sound added with audio dubbing and the original sound are played back as follows:

ST1: The original sound alone is played back.
ST2: The dubbed sound alone is played back.
MIX: The original sound and the sound added with audio dubbing are played back together.

- **Do not perform audio dubbing onto unrecorded parts of the tape. This could cause the playback picture and sound to be distorted.**
- If you reset the Tape Counter to zero at the point where you want the audio dubbing to end and turn on the Memory Stop Function **(➔ 166)**, the audio dubbing automatically stops when the tape reaches that point.



Remote Controller

Using the wireless Remote Controller supplied with the Movie Camera allows operating most of the Movie Camera's major functions from a distance.

Buttons on the Remote Controller

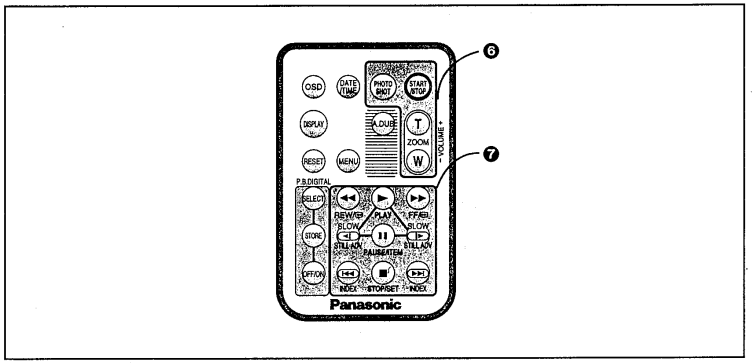
❶ **Indication Output Button [OSD] (➔ 52)**
To display the function and operation indications on a connected TV.

❷ **Date and Time Button [DATE/TIME] (➔ 44)**
To make the Date/Time Indication appear or disappear in the picture during recording or playback.

❸ **Indication Shift Button [DISPLAY] (➔ 174)**
To select the desired Counter Indication.

❹ **Reset Button [RESET] (➔ 166)**
To reset the Tape Counter to zero.

❺ **Audio Dubbing Button [A.DUB] (➔ 94)**
To perform audio dubbing.



❻ **Controls for Recording and Sound Volume**

Photoshot Button [PHOTO SHOT] (➔ 38)
To record still pictures.

Recording Start/Stop Button [START/STOP] (➔ 30)
To start and pause recording.

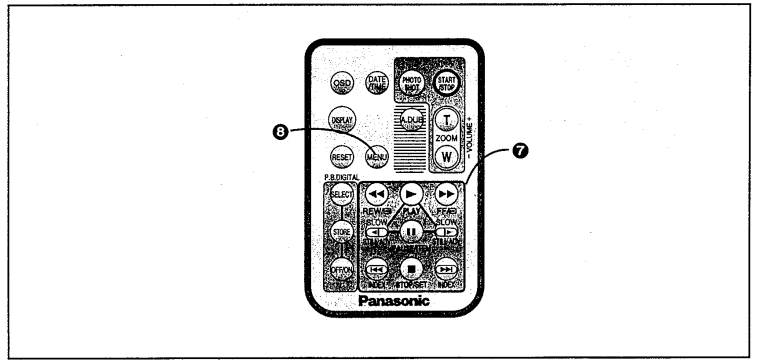
Zoom/Sound Volume Buttons [ZOOM/VOLUME]
CAMERA Mode: To zoom in and out. **(➔ 36)**
VCR Mode: To adjust the volume of the playback sound. **(➔ 44)**

❼ **Controls for Playback and Menu Settings**

Rewind/Review Button [◀◀]
To start review playback **(➔ 46)** if pressed during normal playback; and to rewind the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(➔ 56)** in reverse direction if kept pressed in the Recording Pause Mode. Pressing it briefly activates the Recording Check Function **(➔ 32)**.

Fast-forward/Cue Button [▶▶]
To start cue playback **(➔ 46)** if pressed during normal playback; and to fast-forward the tape if pressed in the Stop Mode.
Also to activate the Camera Search Function **(➔ 56)** in forward direction if kept pressed in the Recording Pause Mode.

Play Button [▶] (➔ 44)
To start playback.



❼ **Controls for Playback and Menu Setting (Continued)**

Slow Motion/Still Advance Button [◂I, I▸] (➔ 48, 50)
To perform Slow Motion Playback if pressed in the Normal Playback Mode; and to perform Still Advance Playback if pressed in the Still Playback Mode.
(◂I: in reverse direction, I▸: in forward direction)

Index Search Button [I◀◀, ▶▶I] (➔ 60, 62)
To search for recorded scenes marked with an index signal and for still images recorded in the Photoshot Mode.
(I◀◀: in reverse direction, ▶▶I: in forward direction)

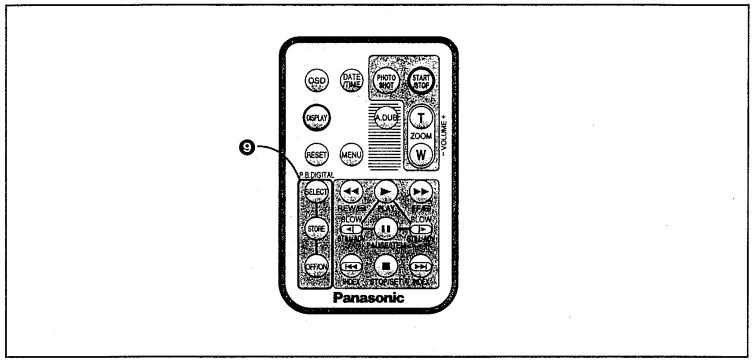
Stop Button [■] (➔ 44)
To stop the tape.

Pause Button [❚❚] (➔ 50, 94)
To pause playback. The playback picture stands still.

❽ **Menu Button [MENU]**
Pressing the Menu Button [MENU] displays the Menu.
In this case, the functions of the following buttons are changed:

Pause Button → Item Button
To select items on the Menu.

Stop Button → Setting Button
To set the mode for the selected item.

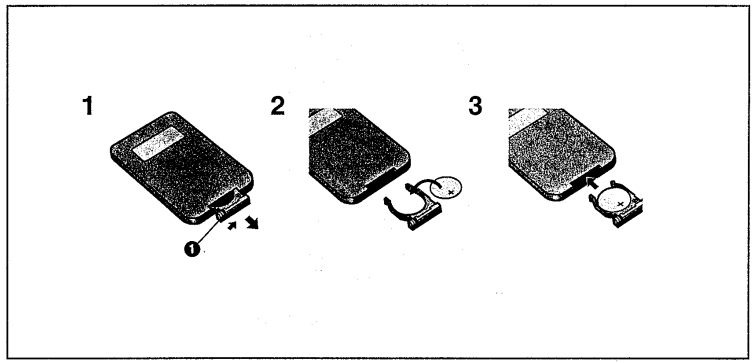


9 Playback Digital Effects

Selection Button [SELECT] (➔ 90)
To select the desired digital effect for [EFFECT SELECT] on the [VCR MENU1] Menu.

Store Button [STORE] (➔ 92)
To store a still picture in memory for the Wipe or Mix Function.

Off/On Button [OFF/ON] (➔ 92)
To suspend the selected digital mode or re-activate it.
To start a Wipe or Mix transition from the still picture stored in memory.



Remote Controller (Continued)

■ Inserting the Button-type Battery

Insert the supplied button-type battery before using the Remote Controller.

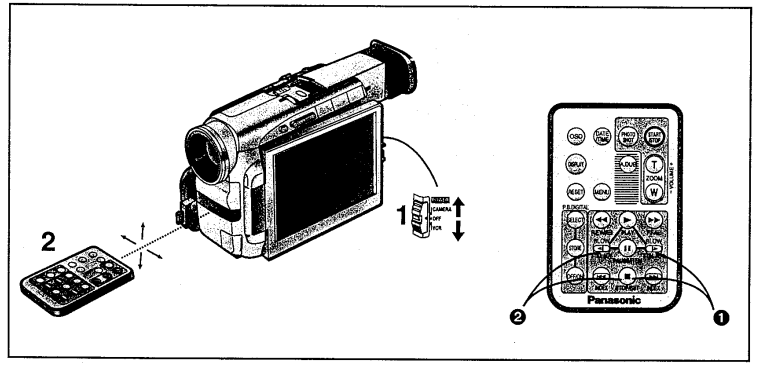
1 Pull out the Battery Holder while pressing the Stopper ❶.

2 Insert the button-type battery with the stamped (+) mark facing upward.

3 Insert the Battery Holder into the Remote Controller.

- When the button-type battery is exhausted, replace it with a new CR2025 battery.
  (The life of the battery is about 1 year. However, it depends on the frequency of use.)
- **Keep the button-type battery out of the reach of children.**
- Make sure you insert the battery with its poles correctly aligned.

CAUTION
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



■ Using the Remote Controller

1 Set the [POWER] Switch to [CAMERA] or [VCR].
When you want to perform recording operations, set the switch to [CAMERA]; and when you want to perform playback operations, set it to [VCR].

2 Aim the Remote Controller at the Remote Control Sensor on the Movie Camera and press the appropriate button.
Distance to the Movie Camera: Less than 5 metres.
Angle: Approximately 15° up, down, left and right from centre axis.

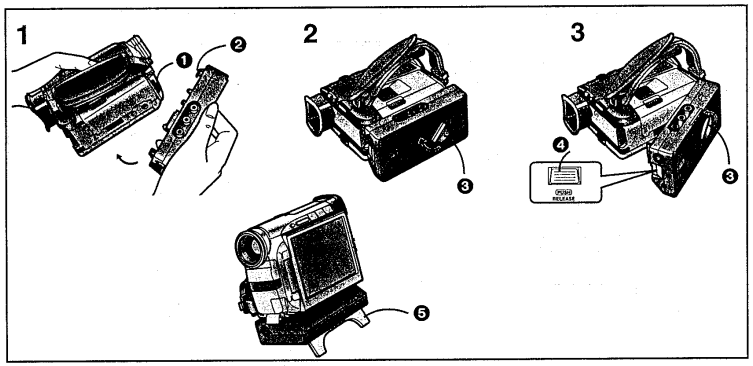
- The operative range described above is valid for using the Remote Controller indoors.
  When using it outdoors or under strong lights, it may not work correctly even within the above range.
- Within a distance of about 1 metre, it is also possible to use the Remote Controller from the side (LCD Monitor side).

Selecting the Remote Controller Mode
When using two Movie Cameras at the same time, selecting different Remote Controller Modes makes it possible to operate them separately.

- If the Remote Controller Mode set on the Movie Camera and on its Remote Controller are not matched, the [REMOTE] Indication appears.
- Replacing the button-type battery in the Remote Controller automatically resets it to the [VCR1] Mode.
- Set [REMOTE] on the Menu to the desired Remote Controller Mode. **(➔ 132)**

Setting to Be Made on the Movie Camera:
Set [REMOTE] on the [CAMERA MENU3] Menu or on the [VCR MENU2] Menu to the desired Remote Controller Mode.

Setting to Be Made on the Remote Controller:
[VCR1]: Press the [▮▸] Button and [■] Button simultaneously. ❶
[VCR2]: Press the [◂▮] Button and [■] Button simultaneously. ❷



Using the Output Terminal Box [AV ONE TOUCH STATION]

When you want to connect the Movie Camera to a TV for playback or to other video equipment for editing and other purposes, attach the Output Terminal Box [AV ONE TOUCH STATION].

Attaching the Output Terminal Box [AV ONE TOUCH STATION]

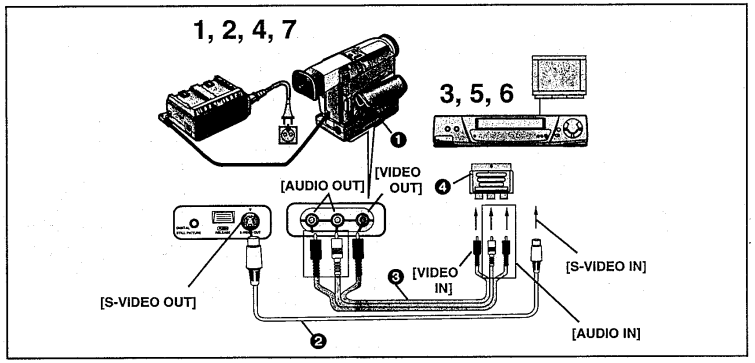
1 Insert the protruding hook ❷ of the Output Terminal Box [AV ONE TOUCH STATION] into the groove ❶ on the front of the Movie Camera and attach the Output Terminal Box in the direction of the arrow until it locks with a click.

2 Fasten the locking screw ❸ to attach the Output Terminal Box securely.

Removing the Output Terminal Box [AV ONE TOUCH STATION]

3 Loosen the locking screw ❸ and remove the Output Terminal Box while pressing the [PUSH RELEASE] Button ❹.
Hold both the Movie Camera and the Output Terminal Box firmly to prevent them from dropping.

Stand
For easier viewing of the playback picture on the LCD Monitor when placing the Movie Camera on a table, etc., you can extend the Stand ❺ on the underside of the Box. This automatically extends an additional support on the opposite side of the Output Terminal Box.



Copying onto an S-VHS (or VHS) Cassette (Dubbing)

You can copy the picture and sound recorded on this Movie Camera onto an S-VHS or VHS cassette in a home video recorder.

After making the connections shown above, perform the necessary operations.

- Before copying, be sure to press the [OSD] Button on the Remote Controller (➔ 98) so that no indications are visible. Otherwise, the displayed tape counter and function indications are also copied.

Movie Camera:

1 Set the [POWER] Switch to [VCR].
While pressing the centre button, slide the switch to [VCR].

2 Insert the recorded cassette.

VCR:

3 Insert an unrecorded cassette with intact erasure prevention tab.
As some settings (external input, tape speed, etc.) on the VCR are necessary, please refer to your VCR's operating instructions.

Movie Camera:

4 Press the Play Button [▶] to start playback.

VCR:

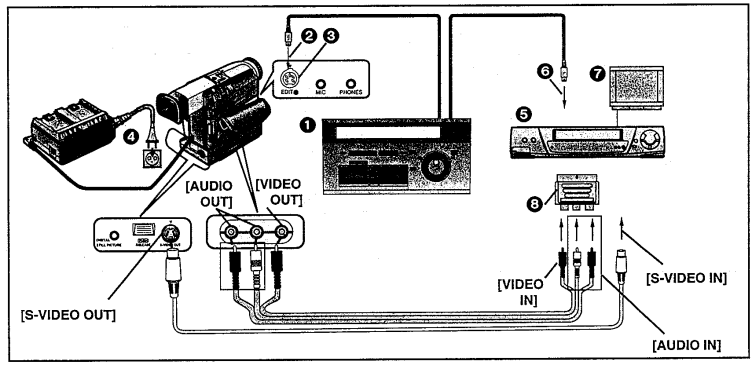
5 Start recording.

6 Press the Pause or Stop Button to stop recording.

Movie Camera:

7 Press the Stop Button [■] to stop playback.

❶ Output Terminal Box [AV ONE TOUCH STATION]
❷ S-Video Cable
❸ AV Cable
❹ 21-Pin Adaptor



Copying with the Help of an Editing Controller

If you connect the Movie Camera to an Editing Controller equipped with 5-pin Edit Socket, this Movie Camera's playback functions can be controlled from the Editing Controller.
(The Output Terminal Box [AV ONE TOUCH STATION] is necessary.)

After connecting all equipment as shown above, perform the necessary operations.

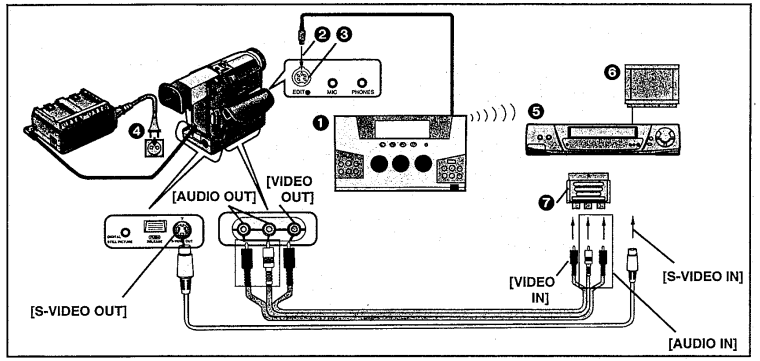
When Connecting the Editing Controller VW-EC500E ❶ (optional)

- A VCR equipped with 5-pin Edit Socket is necessary.
- When you connect the VW-EC500E to the Movie Camera, an adjustment on the VW-EC500E is necessary. For the operation of the Editing Controller, refer to its operating instructions.

When Editing with Time Code
Press the [DISPLAY] Button on the Remote Controller to make the Time Code appear.

- When the Time Code is displayed, the Time Code Signal is output from the Edit Socket.
- When the Counter Indication is displayed, the Linear Tape Counter Signal is output.

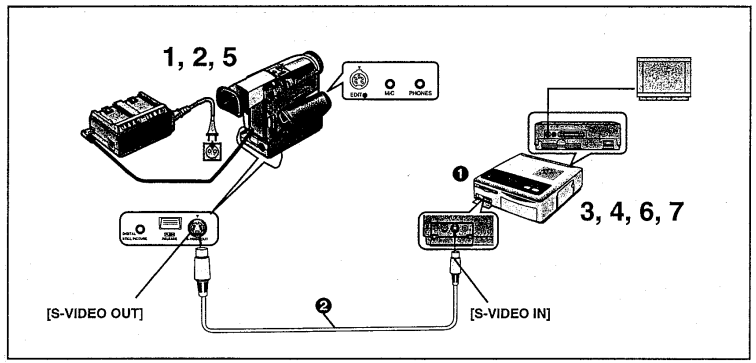
❷ To Edit Socket
❸ Edit Socket
❹ Connect the AC Adaptor.
❺ VCR (not supplied)
❻ To Edit Socket
❼ TV (not supplied)
❽ 21-Pin Adaptor



When Connecting the Editing Controller VW-EC1E (optional)

- When you use the Editing Controller VW-EC1E ❶, it is not necessary to connect it to the Edit Socket on the VCR, as the VCR's operation is performed via infrared remote control. Therefore, editing is also possible onto VCRs not equipped with an Edit Socket.
- For the operation of the Editing Controller, refer to its operating instructions.

❷ To Edit Socket
❸ Edit Socket
❹ Connect the AC Adaptor.
❺ VCR (not supplied)
❻ TV (not supplied)
❼ 21-pin Adaptor



Using the Movie Camera with a Video Printer

If you connect the Movie Camera to a Video Printer ❶, you can print still pictures from scenes recorded with the Movie Camera.

Movie Camera:

1 **Set the [POWER] Switch to [VCR].**
While pressing the centre button, slide the switch to [VCR].

2 **Insert a recorded cassette.**

Video Printer:

3 **Turn the Video Printer on.**

4 **If the Video Printer is equipped with Digital Image Stabilizer Function and/or Moving/ Still Picture Mode, adjust them according to the picture being input.**

Movie Camera:

5 **Press the Play Button [▶].**

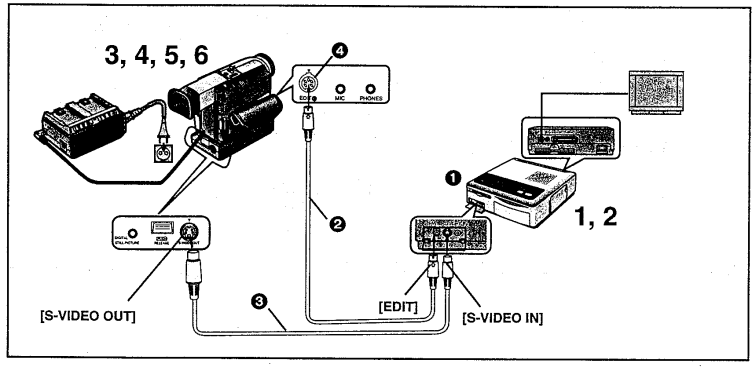
Video Printer:

6 **Store the image in memory.**

7 **Start printing.**

- For details about the operation of the Video Printer, read its operating instructions.

❷ S-Video Cable



Using the Automatic Printing Function (Autoprint)

If you connect the Movie Camera to a Video Printer ❶ equipped with 5-pin Edit Socket, you can use the AutoPrint Function to automatically print all still pictures recorded in the Photoshot Function.

Video Printer:

1 **Turn the Video Printer on.**

2 **Make the necessary settings on the Video Printer according to the input signal.**

Movie Camera:

3 **Set the [POWER] Switch to [VCR].**
While pressing the centre button, slide the switch to [VCR].

4 **Search for the first still picture from which you want to start printing with the Auto Print Function.**
If you want to print all still pictures recorded on the cassette, rewind the tape to its beginning.

5 **Press the [MENU] Button.**

6 **Set [AUTOPRINT] on the [VCR MENU2] Menu to [ON].**
Automatic printing starts.

- If you want to stop the automatic printing in the middle, press the Stop Button [■] on the Movie Camera.

❷ Edit Cable VW-K5E (optional)
❸ S-Video Cable
❹ Edit Socket

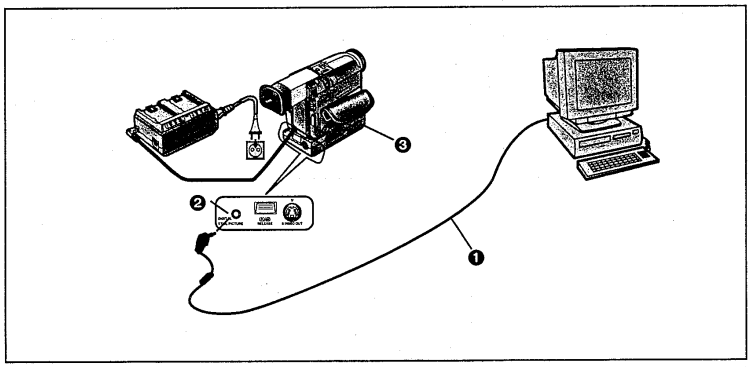
- When the cooling function of the Video Printer activates and the printing speed slows down, automatic printing may stop. In this case set [AUTOPRINT] on the [VCR MENU2] Menu to [ON] again.

- If you replace the ink cassette or paper during printing, the same picture may be printed twice.

- If still pictures are recorded successively in the Photoshot Mode, some pictures may be skipped during printing.

- Before storing an image in memory on the Video Printer, press the [OSD] Button (→ **98**) on the Remote Controller of the Movie Camera so that no indications appear in the picture. Otherwise, the Counter Indication and other function indications are also printed in the picture.

- In the following cases, some pictures may be skipped when printing with the Auto Print Function.
  - When you print still pictures recorded in the Photoshot Mode on a video camera of another brand.
  - If you turn the Movie Camera on and off several times (3 times or more) between recording two still pictures in the Photoshot Mode.
  - When you record a still picture in the Photoshot Mode on the same part of a cassette where a Photoshot picture was recorded before.
  - When you select a different recording speed (SP/LP) between the recording of two still pictures in the Photoshot Mode.
  - At the first Photoshot picture to be printed.



Using the Movie Camera with a Computer

The Personal Computer Connection Kit VW-DTA1E (optional) for Digital Video Cameras makes it possible to connect the Movie Camera to a computer and transmit still video images to it. (The Output Terminal Box [AV ONE TOUCH STATION] is also necessary.)

Computer System Requirements

DV STUDIO can be installed in a PC/AT personal computer which can run Microsoft® Windows® 95.

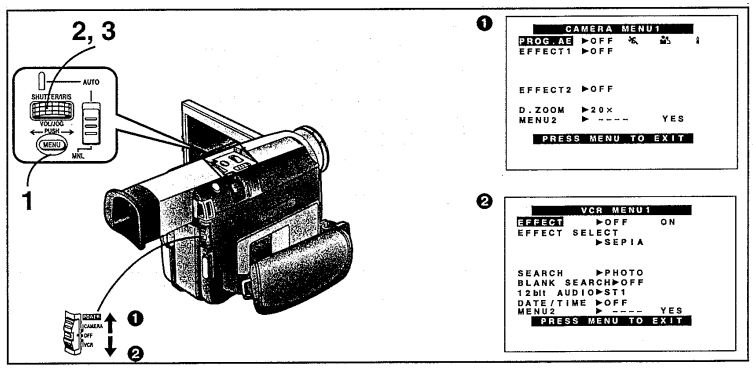
Compatible machines:	Personal computer with 80486DX4 or higher CPU (Pentium™ or higher recommended)
Graphic card:	True Color (approx. 16.7 million colours) recommended (operation also possible even with 256 colours)
Installed memory:	16 MB or more (32 MB or more recommended)
Free hard disk space:	At least 10 MB
Disk drive:	CD-ROM drive
Serial port:	RS-232C (D-sub 9pin)
Other requirements:	Mouse

To connect the Movie Camera to the computer, use the special Interface Adaptor ❶ contained in the Personal Computer Connection Kit.

- When using the Personal Computer Connection Kit, the [POWER] Switch on the Movie Camera must be set to [VCR].
- Pictures that you intend to import into computer applications should be recorded in the SP Mode.
- When recording, take care that the Time Code is uninterrupted from the beginning of the tape.
- Windows® 95 is a trademark of Microsoft Corporation U.S.A.
- All other company and product names in the operating instructions are trademarks of their respective corporations.

❷ Digital Still Picture Terminal

❸ Output Terminal Box [AV ONE TOUCH STATION]



Using the Menu Screen

This Movie Camera displays the settings of various functions in Menus to make it easy to select the desired functions and settings.

1 **Press the [MENU] Button.**
The Menu appears.

2 **Turn the [PUSH] Dial to select the item to be set.**
Turning the [PUSH] Dial changes the highlighted item.

3 **Press the [PUSH] Dial to set the selected item to the desired mode.**
Every press moves the cursor [▶] to the next mode.

Displaying the Camera Mode Menu ❶

Press the [MENU] Button in the Recording Pause Mode.

- While the Menu is displayed, recording is not possible.
- During recording, displaying the Menu is not possible.

Displaying the VCR Mode Menu ❷

Press the [MENU] Button when the [POWER] Switch is set to [VCR].

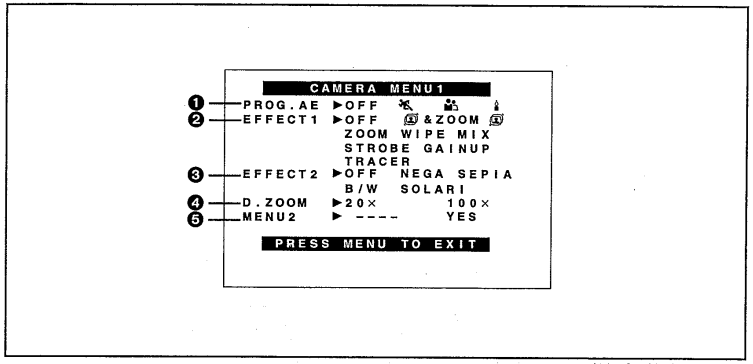
- While the Menu is displayed, playback is not possible.
- During playback, displaying the Menu is possible.

Exiting the Menu

Press the [MENU] Button again.

Note About the Settings Made on the Menu

The settings you selected on the Menu are maintained when you turn the Movie Camera off. However, if you disconnect the power supply unit (Battery or AC Adaptor) from the Movie Camera before turning it off, the selected settings may not be maintained.



Menu Functions

The illustrations of the menus are intended for explaining the functions; the actual menus look somewhat different.

Camera Mode Menu [CAMERA MENU1]

❶ Auto Exposure Mode [PROG.AE] (➔ 68, 70)

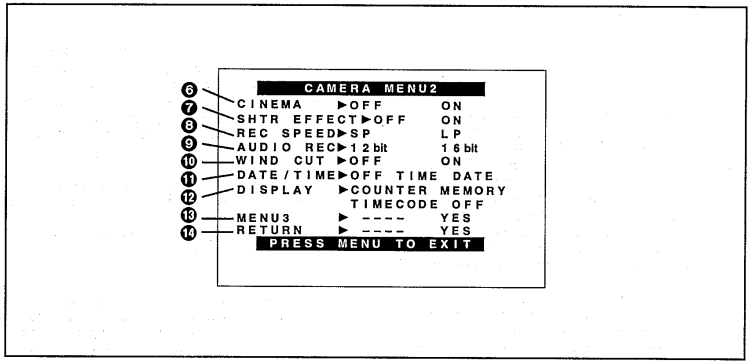
❷ Digital Effects 1 [EFFECT1] (➔ 72, 74)

❸ Digital Effects 2 [EFFECT2] (➔ 72, 74)

❹ Digital Zoom [D.ZOOM] (➔ 36)

❺ Advancing to Menu 2 [MENU2] (➔ 130)

If you set [MENU2] to [YES], the Menu changes to the [CAMERA MENU2] Menu.


CAMERA MENU2
6 CINEMA ▶OFF ON
7 SHTR EFFECT ▶OFF ON
8 REC SPEED ▶SP LP
9 AUDIO REC ▶12bit 16bit
10 WIND CUT ▶OFF ON
11 DATE/TIME ▶OFF TIME DATE
12 DISPLAY ▶COUNTER MEMORY
TIMECODE OFF
13 MENU3 ▶ ---- YES
14 RETURN ▶ ---- YES
PRESS MENU TO EXIT

Camera Mode Menu (Continued) [CAMERA MENU2]

❻ Cinema-like Format Recording [CINEMA] (➔ 40)

❼ Shutter Effect [SHTR EFFECT] (➔ 38)

❽ Recording Speed Mode [REC SPEED] (➔ 24)

❾ Audio Recording Mode [AUDIO REC] (➔ 94)

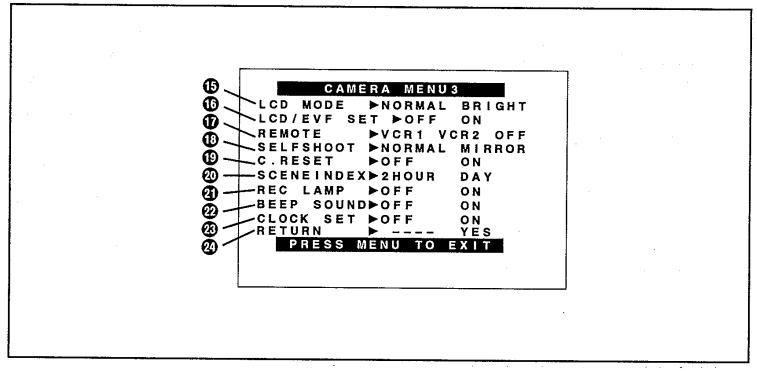
❿ Wind Noise Reduction [WIND CUT]
If you set [WIND CUT] to [ON], the noise of the wind hitting the microphone is reduced. However, this also causes a slight deterioration of the sound reproduction in the bass range.

⓫ Date and Time Indication [DATE/TIME] (➔ 44)

⓬ Counter Display Mode [DISPLAY] (➔ 174)

⓭ Advancing to Menu 3 [MENU3] (➔ 132)
If you set [MENU3] to [YES], the Menu changes to the [CAMERA MENU3] Menu.

⓮ Returning to the Previous Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [CAMERA MENU1] Menu.


CAMERA MENU3
15 LCD MODE ▶NORMAL BRIGHT
16 LCD/EVF SET ▶OFF ON
17 REMOTE ▶VCR1 VCR2 OFF
18 SELFSHOOT ▶NORMAL MIRROR
19 C.RESET ▶OFF ON
20 SCENEINDEX ▶2HOUR DAY
21 REC LAMP ▶OFF ON
22 BEEP SOUND ▶OFF ON
23 CLOCK SET ▶OFF ON
24 RETURN ▶ ---- YES
PRESS MENU TO EXIT

Camera Mode Menu (Continued) [CAMERA MENU3]

⓯ LCD Lighting Mode [LCD MODE] (➔ 140)

⓰ LCD and Finder Adjustment [LCD/EVF SET] (➔ 140)

⓱ Remote Controller Mode [REMOTE] (➔ 108)

⓲ Self-Recording [SELFSHOOT] (➔ 34)

⓳ Counter Reset [C.RESET] (➔ 166)
To reset the counter to zero.
However, the Time Code cannot be reset.

⓴ Scene Index Mode [SCENEINDEX] (➔ 64)

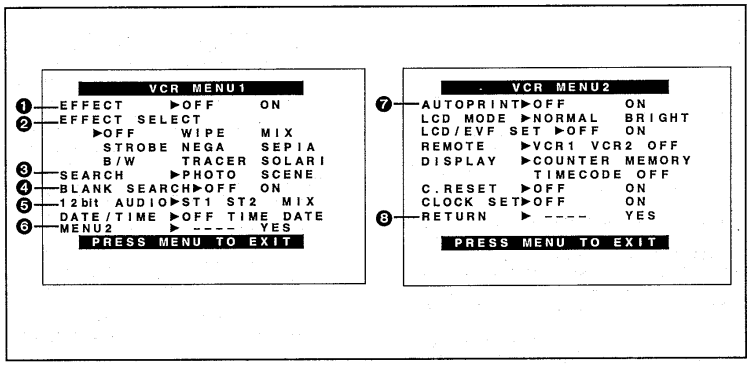
㉑ Recording Lamp [REC LAMP] (➔ 30)

㉒ Beep Sound [BEEP SOUND]

If you set [BEEP SOUND] to [ON], a confirmation/ alarm beep sound is emitted in the following cases:
-When you turn on the Movie Camera.
-When you start recording and pause recording.
-When the tape reaches its end during recording, or when the tape has reached its end and you try to start recording.
-When you try to start recording without having inserted a cassette.
-When you insert a cassette with its erasure prevention slider set to [SAVE] and try to start recording.
-When condensation has formed inside the Movie Camera.

㉓ Date and Time Setting [CLOCK SET] (➔ 136)

㉔ Returning to the Previous Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [CAMERA MENU2] Menu.



VCR Mode Menu
[VCR MENU1]

❶ Digital Effect On/Off [EFFECT] (➜ 90)

❷ Digital Effect Selection [EFFECT SELECT] (➜ 90)

❸ Index Search Mode [SEARCH] (➜ 60, 62, 64)

❹ Blank Search [BLANK SEARCH] (➜ 58)

❺ Audio Output Mode [12bit AUDIO] (➜ 94)

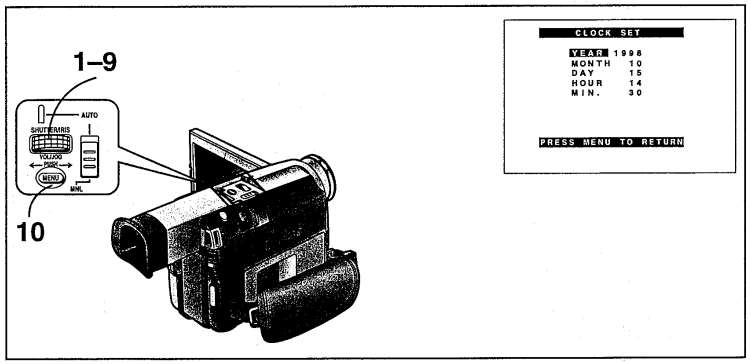
❻ Advancing to Menu 2 [MENU2]
If you set [MENU2] to [YES], the Menu changes to the [VCR MENU2] Menu.

[VCR MENU2]

❼ Automatic Printing [AUTOPRINT] (➜ 120)

❽ Returning to the Previous Menu [RETURN]
If you set [RETURN] to [YES], the Menu changes back to the [VCR MENU1] Menu.

•All other items on the VCR Mode Menus are the same as on the Camera Mode Menus.



Setting the Date and Time

If you set [CLOCK SET] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [ON], the Menu shown above appears. **(➜ 132, 134)**

For example: To set the clock to 15th October 1998, 14:30.

1 Turn the [PUSH] Dial to set to [1998].
The years change in the following order:
1990→1991→...→2089→1990→...

2 Press the [PUSH] Dial to select [MONTH].

3 Turn the [PUSH] Dial to set to [10].

4 Press the [PUSH] Dial to select [DAY].

5 Turn the [PUSH] Dial to set to [15].

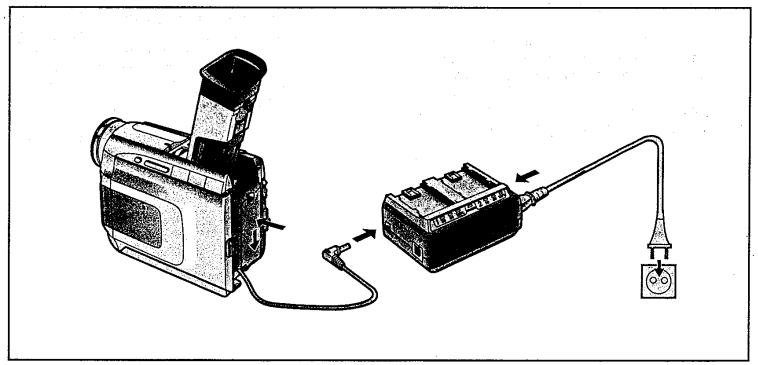
6 Press the [PUSH] Dial to select [HOUR].

7 Turn the [PUSH] Dial to set to [14].

8 Press the [PUSH] Dial to select [MIN.].

9 Turn the [PUSH] Dial to set to [30].

10 Press the [MENU] Button to finish the date and time setting.
The operation of the clock starts from [00] seconds.

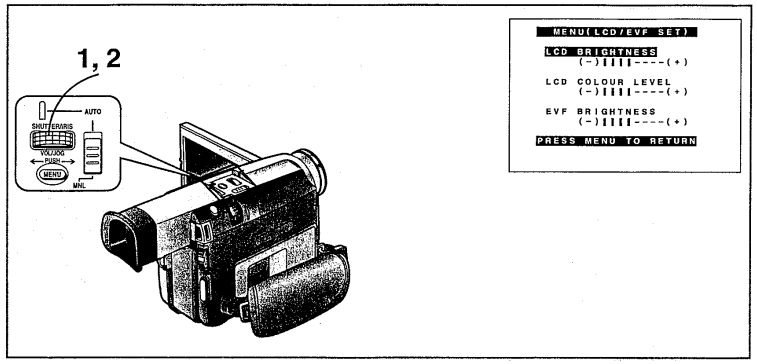


Charging the Built-in Lithium Battery
The built-in battery maintains the operation of the clock. When the [ ] Indication appears, the built-in lithium battery is discharged. Charge the discharged battery in the following way and after charging is finished, set the date and time.

1 Connect the AC Adaptor to the Movie Camera and to an AC mains socket. (➜ 16)

2 Leave the Movie Camera turned off.

3 Leave the Movie Camera in this condition for approximately 4 hours.
After charging for 4 hours, the built-in lithium battery can power the clock for approximately 3 months.



Adjusting the LCD Monitor

If you set [LCD/EVF SET] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [ON], the following items are displayed.

LCD Brightness [LCD BRIGHTNESS]
To adjust the brightness of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

LCD Colour Level [LCD COLOUR LEVEL]
To adjust the colour saturation of the LCD screen. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the stronger are the colours.

Finder Brightness [EVF BRIGHTNESS]
To adjust the brightness of the Finder. The Bar Indication is divided into 8 steps. The more vertical bars are shown, the brighter is the screen.

1 Press the [PUSH] Dial to select the item that you want to adjust.

2 Turn the [PUSH] Dial. Turning it increases or decreases the number of vertical bars of the Bar Indication.

If you use the Remote Controller for this adjustment, press the [ITEM] Button and then adjust the brightness by pressing the [SET] Button. The number of bars gradually increases toward the right end, and then decreases again.

Increasing the Brightness of the Whole LCD Monitor Screen
Set [LCD MODE] either on the [CAMERA MENU3] Menu or [VCR MENU2] Menu to [BRIGHT].

- These adjustments have no influence on the actually recorded picture.

Cautions for Use

Take care that no water enters the Movie Camera when using it in the rain and snow or on the beach.
- The Movie Camera and the cassette could become damaged. (It might not be repairable.)

Keep the Movie Camera away from magnetized equipment (TVs, Video games, etc.).
- If you use the Movie Camera on or near a TV, the electromagnetic radiation may cause picture and sound distortion.
- Strong magnetic fields generated by speakers and large motors may damage the recordings on the tape and distort the picture.
- The electromagnetic radiation from micro-processors can adversely influence the Movie Camera and cause picture and sound distortion.
- If the Movie Camera is adversely influenced by magnetized equipment and does not work correctly, turn the Movie Camera off, remove the Battery or disconnect the AC Adaptor and attach the Battery or connect the AC Adaptor again. Then turn the Movie Camera on.

Do not use the Movie Camera near a radio transmitter or high-voltage power line.
- If you record near a radio transmitter or high-voltage power line, the recorded picture and sound may be adversely influenced.

Do not use the Movie Camera for surveillance and other industrial applications.
- If the Movie Camera is being used for a long time, the inside temperature could rise excessively and this may cause malfunction.
- This Movie Camera is not designed for industrial use.

Take care that no sand and fine dust enters the Movie Camera when using it on a beach or similar places.
- Sand and dust could damage the Movie Camera and cassette. (Be careful when inserting and removing the cassette.)

Do not spray insecticide or volatile agents on the Movie Camera.
- Such agents could deform the body and cause the surface coating to peel off.
- Do not leave the Movie Camera in direct contact with rubber or plastic products for a long time.

Do not use benzine or thinner for cleaning.
- They could deform the body and cause the surface coating to peel off.
- Before cleaning, remove the Battery or unplug the AC Mains Cable from the AC mains socket.

- Wipe the Movie Camera with a soft, clean cloth. To remove persistent stains, wipe with a cloth moistened with mild detergent diluted with water, and then finish with a dry cloth.

After use, always take out the cassette and remove the Battery or unplug the AC Mains Cable from the AC mains socket.
- If you leave the cassette in the Movie Camera, the tape can become loosened and damaged.
- If you leave the Battery attached to the Movie Camera for a long time, the voltage level may drop excessively so that the Battery cannot be used any more even after charging.

■ Condensation

Determining Whether Condensation Has Formed Inside and Remedy for Condensation
If the Condensation Indication flashes after you turn on the Movie Camera, condensation has formed inside the Movie Camera. In this case, the Movie Camera automatically switches off after a few seconds. Remedy as follows:

1 Take out the cassette.
All other functions do not work. Depending on the amount of condensation, it may not be possible to take out the cassette. In this case, wait 2–3 hours before taking out the cassette.

2 Leave the Cassette Compartment open and wait for 2–3 hours.
The required time depends on the amount of condensation and the ambient temperature.

3 After 2–3 hours, turn the Movie Camera on and check if the Condensation Indication is not displayed.
Even if the Condensation Indication is no longer displayed, wait 1 more hour for added safety before using the Movie Camera again.

Pay Attention to Condensation Even Before the Condensation Indication Appears.
- As condensation forms gradually, the Condensation Indication may not appear for the first 10–15 minutes after condensation has formed inside.
- In an extremely cold place, the condensation could freeze and turn into frost. In such a case, it takes an additional 2–3 hours for the frost to first melt into condensation and then to be dissolved.

Remedy for a Fogged-up Lens
Set the [POWER] Switch to [OFF] and leave the Movie Camera in this condition for about 1 hour. When the lens has reached about the same temperature as its surroundings, it automatically clears up.

■ Video Head Clogging and Remedy

When the video heads (which contact the tape) are dirty, the playback picture contains mosaic-like patterns or the whole screen becomes black. If they become even more dirty, the recording performance deteriorates and in the worst case, recording may not be possible at all.

Causes of Dirty Video Heads
- A lot of dust in the air
- High-temperature and high-humidity environment
- Damaged tape
- Long-time use

Using the Mini-DV Format Digital Video Head Cleaner (not supplied)

1 Insert the Head Cleaner into the Movie Camera in the same way as a video cassette.
2 Press the Play Button [▶], and after approximately 20 seconds press the Stop Button [■]. (Do not rewind the tape.)
3 Take out the Head Cleaner. Insert a video cassette, perform recording and then play it back to check the picture.
4 If the picture is still not clear, repeat above operation steps 1 - 3. (Do not use the Head Cleaner more than 3 times in succession.)

5 Do not rewind the tape in the Head Cleaner after every use. Rewind it only after the tape has reached its end, and then use it again in the same way from the beginning.

Notes:
- If the video heads again become clogged with dirt soon after cleaning, this might be caused by a damaged tape. In this case, stop using that cassette immediately.
- Be careful not to clean the video heads too much. (Too much cleaning could cause excessive wear to the video heads. If the video heads get worn, the picture is not played back clearly even after cleaning.)
- If using the Head Cleaner does not clear the video head clogging, the Movie Camera requires cleaning or repairing by a service centre. Please consult with your dealer.
- This Video Head Cleaner is available from Panasonic service centres.

Periodic Inspection
To ensure optimum picture quality, we recommend that you have worn-out parts such as video heads replaced after approximately 1000 hours of use. (However, this depends considerably on the conditions of use such as temperature, humidity and dust.)

■ Optimum Use of the Battery

Special Characteristics of the Battery
This Battery is a rechargeable lithium-ion battery. Its ability to generate electric energy is based on an internal chemical reaction. This reaction is easily influenced by ambient temperature and humidity, and the useful operation time that the Battery can provide becomes shorter at high and low temperatures. When used in extremely cold surroundings, the Battery may only be able to provide approximately 5 minutes of operation time. If the Battery becomes extremely hot, a protection function is activated and prevents the use of the Battery for some time.

After Use, Always Remove the Battery.
Be sure to remove the Battery from the Movie Camera. (If it is attached to the Movie Camera, a small amount of electric current is consumed even if the Movie Camera is turned off.) Leaving the Battery attached to the Movie Camera for a very long time could cause it to become excessively discharged, so that it cannot be used any more even after charging.

Keep the Battery's Terminals Clean.
Be careful that the terminals (the two small round openings) do not get plugged up with dust, dirt or other substances.
If you accidentally drop the Battery, confirm that the Battery itself and the terminals are not deformed. Attaching a deformed Battery to the Movie Camera or to the AC Adaptor could damage the Movie Camera or the AC Adaptor.

Discarding a Battery That Has Become Unusable
- The usable life of the Battery is limited.
- Do not throw the Battery in a fire because it could explode.

■ When the Charge Lamps on the AC Adaptor Flash as Warning

If the ambient temperature is extremely low or high, the Charge Lamps on the AC Adaptor flash. They also flash when some defect has occurred in the Battery or the AC Adaptor.

When the Charge Lamps Flash Slowly
The Battery is being charged, but charging takes longer than normally.

When Only the [80%] Charge Lamp Flashes
Charging is not possible. Remove the Battery once and wait a few minutes, and then re-attach it again for charging.

When the [50%] and [100%] Charge Lamps Flash Alternately, or When No Charge Lamps Light
Remove and then re-attach the Battery. Or, attach the Battery to the Movie Camera and perform playback (or some other operation) for 10 - 20 minutes. Then remove the Battery and attach it again to the AC Adaptor. If charging is still impossible, some malfunction has occurred in the Battery or the AC Adaptor. Please consult with your dealer.

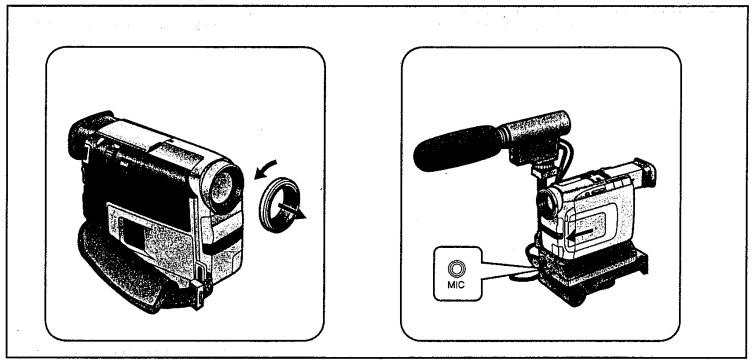
■ Precautions for Storage

Before Storing the Movie Camera, Take out the Cassette and Remove the Battery.
Store all equipment in a dry place where the temperature remains relatively constant. (Recommended temperature is 15°C–25°C and recommended relative humidity is 40%–60%.)

Movie Camera
- Wrap it with a soft cloth to prevent dust from entering.

Battery
- Extremely low or high temperature shortens the Battery life.
- Storing it in places with oily smoke and a lot of dust could cause the terminals to get rusty, and this can result in malfunction.
- **Do not allow metal objects (such as necklaces and hair pins) to touch the battery terminals. Short-circuiting may occur and generate heat, and touching it in this condition could inflict serious burns.**
- Store the Battery in discharged condition. If you store the Battery for a long time, we recommend that you charge it once a year and completely use up the charge before storing it again in discharged condition.

Cassette
- Rewind the tape to its beginning before storing. Leaving the cassette with the tape stopped halfway for more than 6 months (depending on the storing condition) loosens the tape. Be sure to rewind it to the beginning.
- Put the cassette in its case to store it. Dust, direct sunlight (ultraviolet rays) and humidity could damage the tape. Dust contains hard mineral particles and cassettes with dust damage the video heads and other parts of the Movie Camera. Make it a habit to always put the cassette back into its case.
- Completely wind the tape forward and then rewind it once every half year. Leaving the cassette for more than a year without winding/rewinding it may deform the cassette because of stretching and shrinking of the tape due to changes in temperature and humidity. Also, the tape may stick together.
- Do not place the cassette near strongly magnetized objects or equipment.
- The tape surface is coated with microscopic magnetic particles and they record signals. Such objects as magnetic necklaces and toys have stronger magnetic force than commonly thought, and this could erase the recorded contents and cause noise in picture and sound.



■ LCD Monitor/Finder/Lens Hood/ Shoe Adaptor/Microphone Socket

LCD Monitor
- In places where big changes in temperature occur, condensation may form on the LCD Monitor. Wipe it with a soft, dry cloth.
- When the Movie Camera is very cold when it is turned on, the picture on the LCD Monitor is initially a little darker than normally. However, as the internal temperature rises, the LCD Monitor regains its normal brightness.
- Extremely high precision technology is employed in producing the LCD Monitor. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit.

Finder
- Extremely high precision technology is employed in producing the Finder screen. The result is more than 99.99% active pixels, with a mere 0.01% of the pixels inactive or always lit.
- Do not leave the Finder or the Lens aimed at the sun. This could seriously damage internal parts.

Lens Hood
- When you want to attach a filter or conversion Lens with a diameter of 30.5mm, be sure to first remove the Lens Hood by turning it counterclockwise.
- When you want to attach a filter with a diameter of 34mm, attach it without removing the Lens Hood.
- During recording with a filter or conversion lens attached, the four corners of the picture may become dark (vignetting effect), when you push the [W/T] Zoom Lever toward [W]. For details, please also read the operating instructions of the accessory being used.

Shoe Adaptor
- When attaching the Shoe Adaptor (VW-SK9E; optional), mount the Movie Camera toward the front end of the Shoe Adaptor to prevent the Stereo Zoom Microphone (VW-VMS1E; optional) from being recorded in the picture.

Microphone Socket
- If you want to perform audio dubbing via an external microphone or audio equipment, connect it to the [MIC] Socket on the Output Terminal Box [AV ONE TOUCH STATION]. In this case, the Movie Camera's built-in microphone is turned off.

Glossary

■ Digital Video System

In the digital video system, picture and sound are converted into digital signals and recorded onto the tape.
This completely digital recording allows recording and playback of picture and sound with minimum quality deterioration.
In addition, such data as Time Code, Date and Time are also automatically recorded as digital signals.

Features
- Superior picture resolution
- Excellent signal-to-noise ratio
- Stable pictures
- Minimised quality deterioration in dubbing
- Minimised cross colour distortion
- PCM digital sound
- No picture deterioration in LP Mode
- 6.35 mm-wide tape
- Compact cassette with long recording time
- Minimised quality deterioration in editing
- Time Code editing

Compatibility with S-VHS or VHS Cassettes
As this Movie Camera uses a digital method for recording picture and sound, there is no compatibility with conventional S-VHS or VHS video equipment using analog recording methods.
In addition, the size and shape of the cassette are completely different.

Compatibility with Output Signals
As the video and audio signals output from the audio and video output sockets are analog—the same as in conventional video systems—you can connect this Movie Camera to your S-VHS or VHS VCR or TV for playback.

PCM Digital Sound
For recording of the sound, this Movie Camera offers the choice between two different PCM Audio Recording Modes.
- 16 bit, 48 kHz, 2 channels
- 12 bit, 32 kHz, 4 channels

The "16 bit, 48 kHz, 2 channels" Mode offers superior recording sound quality.
The "12 bit, 32 kHz, 4 channels" Mode lets you record the original sound in stereo on two channels and the dubbed sound in stereo on two separate channels.

Sub Code
The digital recording system offers the added capability of recording sub code containing various data.
The following data is recorded as sub code on this Movie Camera:
- Time code
- Recording date and time
- Index signals for locating still images recorded in the Photoshot Mode
- Index signals for locating the beginning of scenes marked with index signal

■ Focus

If you look at an object through a magnifying glass and move it closer or further away from your eye, you will reach a point where the object becomes clearly visible. Being focused or in focus means that the subject can be seen with optimum clarity and sharpness.

Human Eyes
Human eyes have lenses as well, and when we look at objects at different distances, the shape of these lenses changes automatically so that we can always see these objects clearly.

Movie Camera
The image of the subject enters the Movie Camera through the lens and is converted into an electric signal (video signal) for recording onto magnetic tape. The focus is adjusted either manually or automatically by moving a focusing lens.

Auto Focus Adjustment
The Auto Focus System automatically moves the internal focusing lens forward or backward and adjusts the focus so that the subject can be seen clearly.
The Auto Focus Adjustment has the following characteristics:
- It adjusts until the vertical contours of the subject are as sharp and clean as possible.
- It adjusts the focus on the subjects with strong contrast.
- It adjusts the focus on the subject in the centre of the LCD Monitor or Finder.
  Unlike human eyes, the lens of the Movie Camera cannot instantaneously change the focus from a nearby to a distant subject and vice versa.

For the following subjects and recording situations, the Auto Focus System cannot provide precise adjustment.
Use the Manual Focus Mode instead. (→ 84)

❶ **Recording subjects with a part of it near the Movie Camera and another part far away from it**
As the Auto Focus adjusts on the centre part of the image, it is often impossible to bring the nearby and distant parts of the subject into focus.
When you want to record a person with a distant mountain in the back, it is not possible to focus on both.

❷ **Recording subjects behind glass covered with dirt or dust**
As the focus is adjusted on the dirty glass, the subject behind the glass is out of focus. When recording a subject across a street on which cars are running, the focus may be adjusted on the cars.

❸ **Recording subjects in dark surroundings**
As the amount of light information entering through the lens is greatly reduced, the Movie Camera cannot adjust the focus precisely.

❹ **Recording subjects surrounded by objects with shiny surfaces or much light reflection**
As the Movie Camera adjusts the focus on objects with shiny surfaces or much light reflection, the subject may go out of focus.
Therefore, when recording at a lake or the sea, evening scenes, fireworks, or under special types of lighting, the subject may be out of focus.

❺ **Recording fast-moving subjects**
As the internal focusing lens is moved mechanically, it cannot follow fast-moving subjects without delay. Therefore, subjects like children running back and forth may temporarily go out of focus.

❻ **Subjects with weak contrast**
As the Movie Camera adjusts the focus based on vertical contours in the picture, subjects with little contrast such as a white wall may be out of focus.

■ White Balance Adjustment

While most recording with a Movie Camera is probably done outdoors under sunlight, video recording is also done very often under artificial light sources, both indoors and outdoors. However, each of these light sources gives the subject slightly different colours.

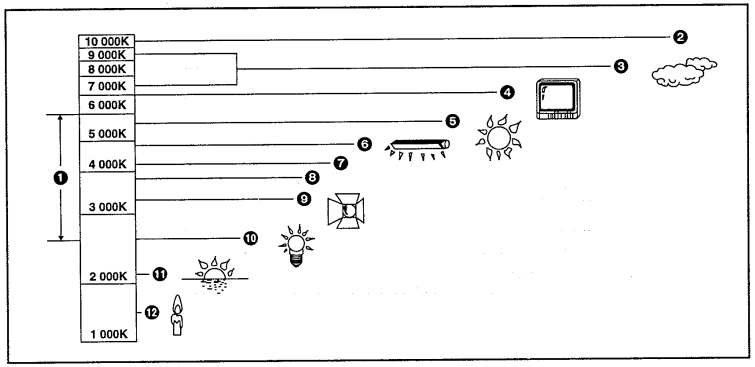
Human Eyes
Human eyes can easily adjust to different kinds of lighting and see an object with the same colours even under different lighting.

Movie Camera
Unlike human eyes, the Movie Camera does not have the innate ability to adapt to changes in lighting, and they influence the colours being recorded. Therefore, depending on the light source, the picture would be recorded with a bluish or reddish tint. To minimise the influence of the lighting on the colours of the subject, an adjustment called White Balance Adjustment is necessary.

White Balance Adjustment
The White Balance Adjustment determines the colour of the light and adjusts the colours so that white remains pure white. As white is the basic colour of the entire colour spectrum, if white is reproduced correctly, the other colours are correct and natural, too.

Auto White Balance Adjustment
This Movie Camera stores the optimum settings for several common light sources in memory. The Movie Camera judges the recording situation by determining the tint of the light received through the lens and by the White Balance Sensor (→ 12), and it selects the setting for the most similar tint. This function is called Auto White Balance Adjustment.
However, as the white balance settings for only a few light sources are stored in memory, the white balance is not correctly adjusted for other lighting conditions.

For the range of different types of lighting within which the Auto White Balance Function can provide precise adjustment, refer to the chart (→ 164). For recording under lighting conditions outside this range, the Auto White Balance Function does not work correctly, and the recorded picture has a red or blue cast. However, the same also applies, if the subject is lit by more than one light source, even if these light sources are within this range.



■ Colour Temperature

Every light source has its own colour temperature measured in Kelvin (K). The higher the Kelvin value, the more bluish the light; the lower the value, the more reddish the light. The Kelvin value is related to the tint of the light, but not directly to its brightness.
The range ❶ indicated in the illustration above shows the light sources for which this Movie Camera can provide precise white balance adjustment and, therefore, natural colours in the recorded pictures, when using the Full Auto Mode. For light sources outside this range, adjust the white balance manually **(➔ 82)**. Also, additional lighting may be necessary.

❶ Control range of this Movie Camera's Auto White Balance Adjustment Mode

❷ Blue sky
❸ Cloudy sky (Rain)
❹ TV screen
❺ Sunlight
❻ White fluorescent lamp
❼ 2 hours after sunrise or before sunset
❽ 1 hour after sunrise or before sunset
❾ Halogen light bulb
❿ Incandescent light bulb
⓫ Sunrise or sunset
⓬ Candlelight

■ Time Code

Time Code signals are the data which indicates the time in hours, minutes, seconds and frames (25 frames/sec). Having this data included in the recording gives every single picture on the tape its own address.

- The Time Code is automatically recorded as part of the sub code with every recording you make.
- When you insert a new (previously unrecorded) cassette, the Time Code automatically starts from zero. If you insert a recorded cassette, the Time Code continues where the time code of the last previous scene stopped. (In this case, the zero indication [0h 00m 00s 00f] may appear after inserting the cassette, but when the recording starts, the Time Code records from the previous value.)
- You cannot reset the Time Code to zero.
- In playback modes other than the Normal Playback Mode, the Time Code may not be displayed (or not be correct).
- Unless the Time Code is recorded continuously from the beginning of the tape, precise editing may not be possible. To ensure that the Time Code is recorded without interruption, we recommend that you use the Camera Search Function **(➔ 56)** or Blank Search Function **(➔ 58)** before starting to record a new scene.

■ Memory Stop Function

The Memory Stop Function is convenient for the following operations.

Rewinding or fast-forwarding the tape to a desired position

1 Reset the Tape Counter to zero at the tape position from which you want to play back later. (➔ 132)

2 Set [DISPLAY] on the [CAMERA MENU2] Menu or [VCR MENU2] Menu to [MEMORY].

3 Start playback or recording.

4 After playback or recording is finished:
Set the [POWER] Switch to [VCR].

5 Rewind the tape.
The tape automatically stops approximately at the position at which you reset the counter to zero.

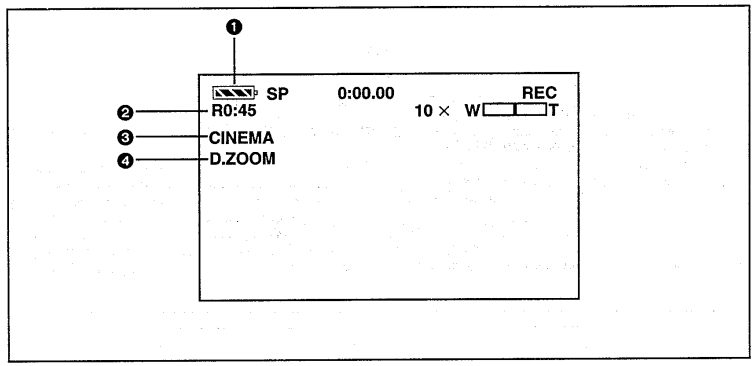
Stopping the editing automatically in the audio dubbing

1 Reset the Tape Counter to zero at the tape position at which you want the editing to stop.

2 Set [DISPLAY] on the [CAMERA MENU2] Menu or [VCR MENU2] Menu to [MEMORY].

3 Play back a still picture at the point at which you want the audio dubbing to start.

4 Start the audio dubbing. (➔ 94)
The audio dubbing automatically stops approximately at the position at which you reset the counter to zero.



Indications on the LCD Monitor/in the Finder

❶ Remaining Battery Power
As the remaining battery power decreases, the indication changes as follows:
→ → → →
When the battery is completely discharged, the ( ) Indication flashes.
(When you are using the AC Adaptor, the Indication may appear, however, this has no meaning in this case.)

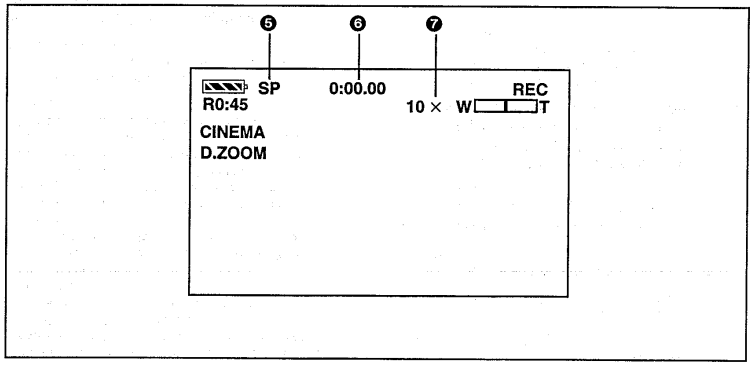
❷ Remaining Tape Time
The remaining tape time is displayed in minutes. (When it becomes less than 3 minutes, the indication starts to flash.)

- If a recording lasts less than 15 seconds, the remaining tape time cannot be displayed correctly.
- The displayed remaining tape time may be shorter than the actual remaining tape time.

❸ Cinema Mode (➔ 40)
When recording in the Cinema Mode, this indication is displayed.

❹ Digital Zoom (➔ 36)
When the Digital Zoom Function is activated, this indication is displayed.

Digital Effects (➔ 72)
When a digital effect is activated, the corresponding indication is displayed.



❺ Recording Speed Mode (➔ 24)
The selected Recording Speed Mode is displayed.
SP: Standard Mode
LP: Long-play Mode

❻ Tape Counter, Time Code (➔ 174)
The Tape Counter, Memory Stop Function or Time Code Indication is displayed.

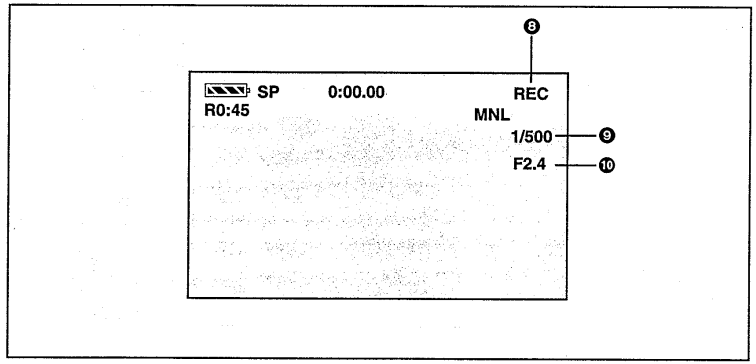
❼ Zoom Magnification (➔ 36)
When you push the [W/T] Zoom Lever up or down, the Zoom Magnification Indication and the Zoom Gauge are displayed.

Recording Mode (➔ 30, 68, 80, 82, 84, 86, 88)
AUTO: This appears when the Mode Selector Switch is set to [AUTO].
MNL: This appears when the Mode Selector Switch is set to [MNL].

Super Image Stabilizer (➔ 42)
: When the Super Image Stabilizer Function is activated, this indication is displayed.

Audio Recording Mode (➔ 94)
12 bit/16 bit: The indication of the Audio Recording Mode that was selected for recording is displayed during playback.

Automatic Printing (➔ 120)
AUTOPRINT: This indication is displayed when the Auto Print Function is being used.

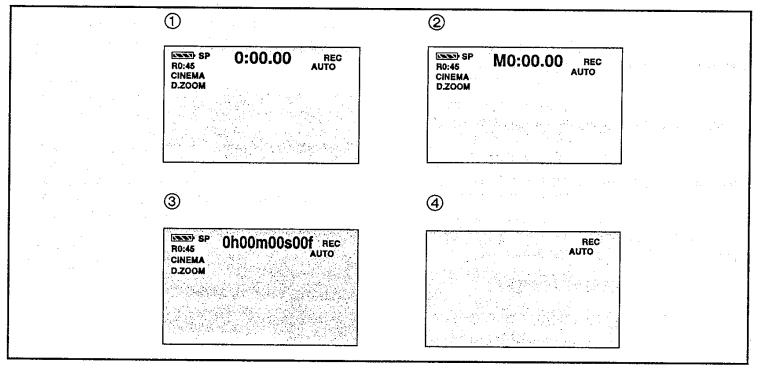


❽ Tape Run Indications
REC: Recording (➔ 30)
PAUSE: Recording Pause (➔ 30)
▷: Playback (➔ 44)/Camera Search in forward direction (➔ 56)
◁: Camera Search in reverse direction (➔ 56)
❚❚: Still Playback (➔ 50)
▷▷: Fast-forward/Cue Playback (➔ 46)
◁◁: Rewind/Review Playback (➔ 46)
❚▷/◁❚: Slow Playback in forward direction/ Slow Playback in reverse direction (➔ 48)
❚❚▷/◁❚❚: Still Advance Playback in forward direction/Still Advance Playback in reverse direction (➔ 50)
▷▷❙/❙◁◁: Index Search in forward direction/ Index Search in reverse direction (➔ 60, 62, 64)
CHK: Recording Check (➔ 32)
A.DUB ▷: Audio Dubbing (➔ 94)
A.DUB ❚❚: Audio Dubbing Pause (➔ 94)
PHOTO: Recording in the Photoshot Mode (➔ 38)
BLANK: Blank Search (➔ 58)
R ▷: Repeat Playback (➔ 44)

●When recording with the LCD Monitor facing forward using the Mirror Mode, only the Remaining Battery Power Indication, the Recording Indication [●] and the Recording Pause Indication [●❚❚] are displayed.

❾ Shutter Speed
When you manually adjust the shutter speed, this indication is displayed. (➔ 86)

❿ Iris Value (F Number)
When you manually adjust the iris, this indication is displayed. (➔ 88)



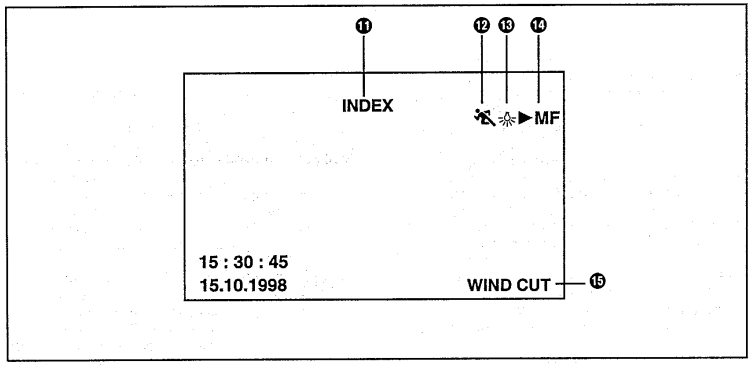
Changing the Indications
By changing the setting for [DISPLAY] on the [CAMERA MENU2] Menu (➔ 130) or [VCR MENU2] Menu (➔ 134), or by repeatedly pressing the [DISPLAY] Button on the Remote Controller (➔ 98), the Counter Display Mode can be changed in the order shown in the above illustrations ①–④.

① Tape Counter Indication

② Tape Counter Indication with activated Memory Stop Indication

③ Time Code Indication

④ No Indication
(In this mode, only the Tape Run Indications, Warning/Alarm Indications, Date/Time Indications, Programme AE Mode Indications, Manual Focus Mode Indications, White Balance Mode Indications, and Zoom Magnification Indication can be displayed.)



⓫ Index (➜ 60)
INDEX: The [INDEX] Indication flashes for a few seconds while an index signal is being recorded.

Search Number (➜ 64)
S1: The figure indicates which number of scene ahead from the present scene is to be played back.

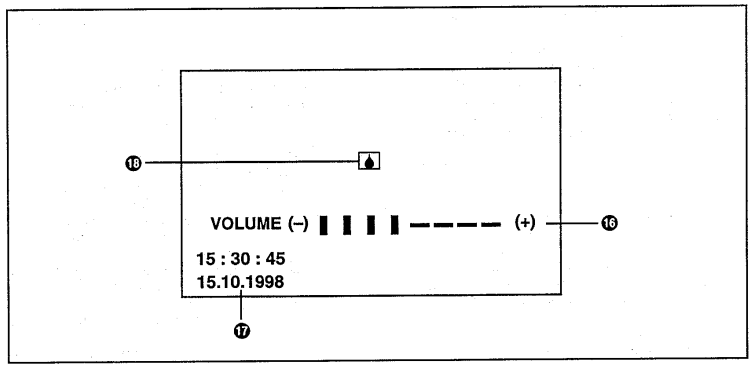
⓬ Programme AE Mode (➜ 68)
The Programme AE Function offers the following settings:
: Sports Mode
: Portrait Mode
: Low Light Mode

⓭ White Balance Mode (➜ 80)
The White Balance Mode offers the following possible settings:
: Indoor Mode (recording under incandescent lamp)
: Outdoor Mode
: Last manually adjusted White Balance setting

When the Movie Camera is in the Auto Mode, none of the above 3 indications are displayed.

⓮ Manual Focus (➜ 84)
If you select the Manual Focus Mode, the [MF] Indication is displayed.
When the Movie Camera is in the Auto Mode, this indication is not displayed.

⓯ Wind Noise Reduction [WIND CUT]
If you set [WIND CUT] on the [CAMERA MENU2] Menu to [ON], the [WIND CUT] Indication is displayed.



⓰ Sound Volume (➜ 44)
Use this indication to adjust the volume of the playback sound from the built-in speaker.
Set the [POWER] Switch to [VCR] and keep the [PUSH] Dial pressed until the [VOLUME] Indication appears.

⓱ Date and Time (➜ 44)
The time is indicated in the 24-hour system.

⓲ Warning/Alarm
When any of the following indications lights or flashes, confirm the condition of the Movie Camera.
: Condensation has occurred. **(➜ 146)**
: The erasure prevention slider of the inserted cassette is closed (set to [SAVE]).
No cassette is inserted.
: The built-in battery is discharged. **(➜ 138)**
: The video heads are dirty.
END: During recording, the tape has reached its end.
REMOTE: Wrong Remote Controller Mode is selected. **(➜ 108)**
PRINTER ERROR: This indication is displayed if you set [AUTOPRINT] on the [VCR MENU2] Menu to [ON] when no printer is connected to the Movie Camera.

Before Requesting Service (Problems & Solutions)

Power Supply

P1: The Movie Camera does not turn on.
S1: Is the Battery or the AC Adaptor connected correctly? Confirm the connection. **(➜ 16)**

P2: The Movie Camera has turned off automatically.
S2: If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. **(➜ 30)**

P3: The Movie Camera quickly turns off.
S3-1: Is the Battery discharged? When the Remaining Battery Power Indication is flashing or the [ ] Indication is displayed, the Battery is discharged. Charge the Battery or attach a fully charged Battery. **(➜ 18, 168)**
S3-2: Has condensation formed? If the Movie Camera is brought from a cold to a warm place, condensation may form inside. In this case, the Movie Camera automatically switches off and no operation can be performed except taking out the cassette. Wait until the Condensation Indication disappears. **(➜ 146)**

Battery

P1: The Battery discharges quickly.
S1-1: Is the Battery fully charged? Charge it until all 3 Charge Lamps on the AC Adaptor light. **(➜ 18)**
S1-2: Are you using the Battery in a place where the temperature is very low? The ambient temperature greatly influences the Battery's performance. Its operation time becomes shorter in a cold place. **(➜ 150)**
S1-3: Has the Battery reached the end of its service life? The service life of the Battery is limited. It depends on the way the Battery is used, but when the operation time even after proper charging is too short for normal use, the service life of the Battery has reached its end.

P2: The Battery cannot be charged.
S2: If the DC Input Cable is connected to the AC Adaptor, charging is not possible. Disconnect the DC Input Cable.

Normal Recording

P1: Recording cannot be started even though the Movie Camera is supplied with power and the cassette is inserted correctly.
S1-1: Is the erasure prevention slider of the cassette open? If it is open (set to [SAVE]), recording is not possible. **(➔ 22)**
S1-2: Has the tape reached its end? Insert a new cassette. **(➔ 22)**
S1-3: Is the Movie Camera turned on? **(➔ 30)**
S1-4: Is the [POWER] Switch set to [CAMERA]? When it is set to [VCR], recording is not possible. **(➔ 30)**
S1-5: Is the Condensation Indication [💧] displayed? When condensation has formed, no functions except taking out the cassette can be operated. Wait until the Condensation Indication disappears. **(➔ 146)**

Other Recording

P1: The picture on the LCD Monitor/in the Finder suddenly stands still for a few seconds.
S1: Did you press the [PHOTO SHOT] Button? If you press the [PHOTO SHOT] Button, a still picture is recorded for approximately 7 seconds. After approximately 7 seconds, the Movie Camera switches back to the Recording Pause Mode. **(➔ 38)**

P2: The Auto Focus Function does not work.
S2-1: Is the Manual Focus Mode selected? If you select the Auto Focus Mode, the focus is adjusted automatically. **(➔ 84)**
S2-2: Is the subject or recording situation suitable for the Auto Focus Mode? The Auto Focus Function does not work correctly for some kinds of subjects and recording situations. In this case, use the Manual Focus Mode to adjust the focus. **(➔ 84)**

Editing

P1: Audio dubbing cannot be performed.
S1-1: Is the erasure prevention slider of the cassette open? If it is open (set to [SAVE]), editing is not possible. **(➔ 22)**
S1-2: Are you trying to edit parts of the tape recorded in the LP Mode? As the tracks recorded in the LP Mode are narrower than the heads, audio dubbing is not possible. **(➔ 24, 94)**

Indications

P1: The Time Code becomes incorrect.
S1: In the Slow Motion Playback Mode in reverse direction, the counter of the Time Code Indication may not be stable, however, this is not a malfunction.

P2: The Remaining Tape Time Indication disappears.
S2: If you record a still picture in the Photoshot Mode, the Remaining Tape Time Indication may disappear temporarily. However, if you switch the Movie Camera over to the Normal Recording Mode, it appears again.

P3: The Remaining Tape Time Indication does not match the actual remaining tape time.
S3-1: If scenes of less than 15 seconds are recorded successively, the remaining tape time is not indicated correctly.
S3-2: The Remaining Tape Time Indication may show a remaining tape time that is 2–3 minutes shorter than the actual remaining tape time.

Playback (Picture)

P1: No playback picture is reproduced when pressing the Play Button [▶].
S1: Is the [POWER] Switch set to [VCR]? When it is set to [CAMERA], no playback function can be operated. **(➔ 44)**

P2: Mosaic-like patterns appear in the picture during Cue, Review or Slow Motion Playback.
S2: This phenomenon is a characteristic of the digital video system. This is not a malfunction. **(➔ 46)**

P3: I want to play back the picture on a TV.
S3: If you attach the Output Terminal Box [AV ONE TOUCH STATION] to the Movie Camera, you can connect the Movie Camera to a TV. **(➔ 52)**

P4: The Movie Camera is correctly connect to a TV, but no playback picture is reproduced.
S4: Did you select "Video Input" on the TV? Carefully read the operating instructions for your TV and select the channel that matches the input sockets used for connection.

P5: The playback picture is not reproduced clearly.
S5: Are the video heads on the Movie Camera dirty? If the video heads are dirty, the picture cannot be played back clearly.

Playback (Sound)

P1: No sound is played back from the Movie Camera's built-in speaker.
S1: Is the volume set too low? During playback, keep the [PUSH] Dial pressed until the [VOLUME] Indication appears. Then turn the [PUSH] Dial to adjust the volume. **(➔ 44)**

P2: Different sounds are played back together.
S2: [12bit AUDIO] on the [VCR MENU1] Menu is set to [MIX]. Therefore, the original sound and the sound dubbed with audio dubbing are played back together. It is also possible to play them back individually. **(➔ 96)**

P3: The original sound was erased by performing audio dubbing.
S3: If you perform audio dubbing on a recording made in the [16bit] Mode **(➔ 94)**, the original sound is erased. If you want to keep the original sound, be sure to select the [12bit] Mode for the original recording.

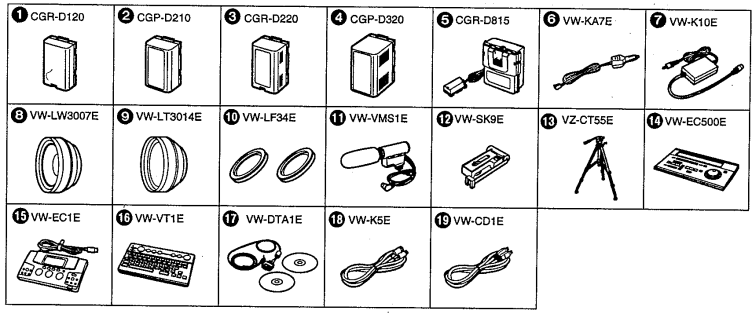
P4: **No playback sound is reproduced.**
S4-1: Are you playing back a cassette that was recorded with [AUDIO REC] on the [CAMERA MENU2] Menu set to [12bit]? In this case, make sure that [12bit AUDIO] on the [VCR MENU2] Menu is set to [ST1] **(➔ 96)**.
S4-2: Is the Variable Speed Search Function activated? Press the Play Button [▶] to cancel the Variable Speed Search Function **(➔ 46)**.

Others

P1: The cassette cannot be taken out.
S1-1: Is the Movie Camera supplied with power? Is the AC Adaptor correctly connected or the Battery correctly attached? To remove the cassette, the Movie Camera must be supplied with power, however, it is not necessary to set the [POWER] Switch to [CAMERA] or [VCR].
S1-2: The attached Battery may be discharged. Replace it with a charged Battery.

P2: No operation except taking out the cassette can be performed.
S2: Is the Condensation Indication [💧] displayed? If condensation has formed inside the Movie Camera, it automatically switches off and prevents all operations except taking out the cassette. Wait until the Condensation Indication disappears. **(➔ 146)**

P3: The Remote Controller does not work.
S3-1: Is the button-type battery in the Remote Controller exhausted? If the Remote Controller does not work when you use it near the Remote Controller Sensor on the Movie Camera, the button-type battery is exhausted. Replace it with a new battery. **(➔ 106)**
S3-2: Is the correct Remote Controller Mode selected? If the Movie Camera's setting for [REMOTE] on the Menu and the mode selected on the Remote Controller are not matched, operating the Movie Camera with the Remote Controller is not possible and the [REMOTE] Indication is displayed. **(➔ 108)**



Optional Accessories

❶ Battery Pack (Lithium)
❷ Battery Pack (Lithium)
❸ Battery Pack (Lithium)
❹ Battery Pack (Lithium)
❺ Battery Pack (Lithium)
❻ Car Adaptor Cord
❼ 5-Pin Synchro Cord
❽ Wide Conversion Lens
❾ Tele Conversion Lens
❿ Filter Kit
⓫ Stereo Zoom Microphone
⓬ Shoe Adaptor
⓭ Tripod
⓮ Editing Controller
⓯ Editing Controller
⓰ Video Titler
⓱ Personal Computer Connection Kit
⓲ Edit Cable
⓳ DV Cable

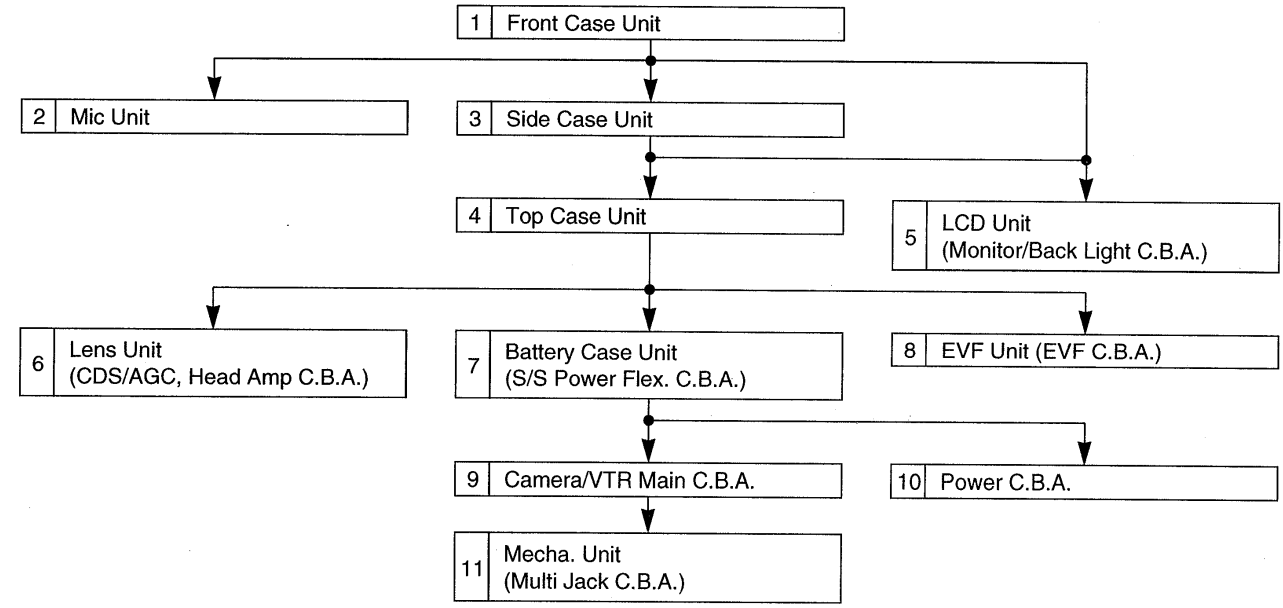
•Some accessories are not available in some countries.

Memo

SECTION 2
ADJUSTMENT PROCEDURES

2-1. DISASSEMBLE FLOW CHART

This flow chart indicates the disassembly steps the cabinet parts, C.B.A. and Mechanism Unit in order to access to items to be serviced. When reinstalling, perform the steps in the reverse order.


1 Front Case Unit
2 Mic Unit
3 Side Case Unit
4 Top Case Unit
5 LCD Unit (Monitor/Back Light C.B.A.)
6 Lens Unit (CDS/AGC, Head Amp C.B.A.)
7 Battery Case Unit (S/S Power Flex. C.B.A.)
8 EVF Unit (EVF C.B.A.)
9 Camera/VTR Main C.B.A.
10 Power C.B.A.
11 Mecha. Unit (Multi Jack C.B.A.)

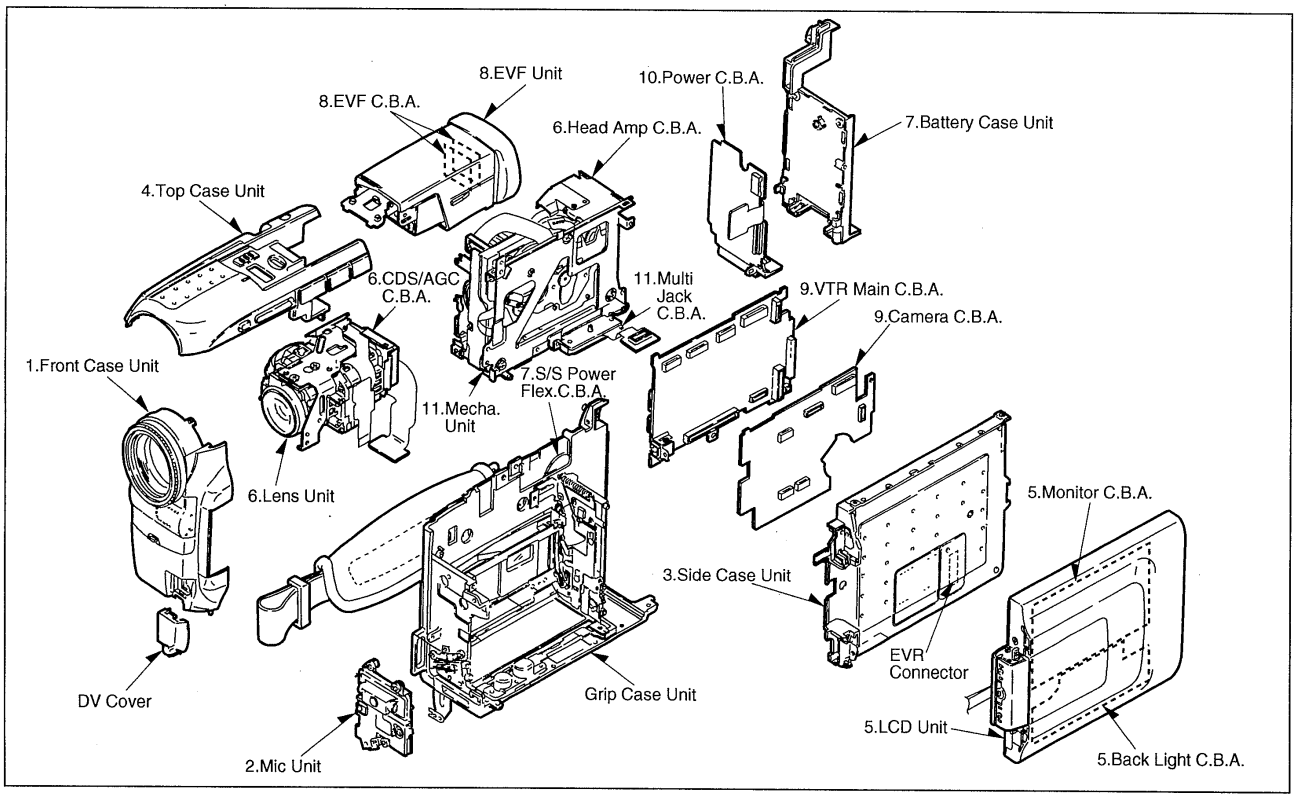


Fig. F1

2-2. DISASSEMBLY PROCEDURES

Flow-chart Disassembly procedure

No.	Item / Part	Fig.	Removal (Screw & Other)
(1)	Front Case Unit	Fig. 1	Remove the DV Cover and Grip Belt. 1-Screw (A) 1-Screw (B) 2-Screws (C) 2-Screws (D) Unlock-----Locking Tab
(2)	Mic Unit	Fig. 2	3-Screws (E) Disconnect FP4801.
(3)	Side Case Unit	Fig. 3	1-Screw (F) 7-Screws (G) 2-Screws (H) 1-Screw (I) 1-Screw (J) 2-Screws (K) Disconnect FP601/FP602/P4201. Remove the Side Case Unit with LCD Unit.
(4)	Top Case Unit	Fig. 3	Disconnect FP6002/FP603. Remove the Top Case Unit.
(5)	LCD Unit	Fig. 4-1 Fig. 4-2 Fig. 4-3	Open the LCD Panel as Fig. 4-1. 2 Screws (L) Remove the LCD Unit from Side Case Unit. 3-Screws (M) 2-Screws (N) 1-Screw (O) 1-Screw (P) 1-Screw (Q)
(6)	Lens Unit	Fig. 5	2-Screws (R) Disconnect PP202/FP701. Remove the Lens Unit.
(7)	Battery Case Unit	Fig. 5	2-Screws (S) 1-Screw (T) 1-Screw (U) Disconnect FP1002/PS1001/PS1002. Remove the Battery Case Unit.
(8)	EVF C.B.A.	Fig. 6-1 Fig. 6-2	Slide the EVF Slide Case. 2-Screws (V) Remove the EVF Unit from Top Case Unit. Remove the Wind Cover. Remove the EVF Slide Case. 3-Screws (W) Unhook----(a) Unhook----(b)
(9)	Camera/VTR Main C.B.A. Caution for Connection of PS3004 & PP702	Fig. 7-1 Fig. 7-2	1-Screw (X) Disconnect PP702/PS3004. Remove the Camera C.B.A. Disconnect the following Connectors. FP2201, FP2202, FP2203, FP3201, PP3002. 1-Screw (Y) Disconnect FP2204. Unhook----(c), (d) Remove the VTR Main C.B.A. ①Fixed the position of the Connector. ②Insert the Connector. ③Collation of insertion.
(10)	Power C.B.A.	Fig. 8	1-Screw (Z) Remove the Power C.B.A. from Battery Case Unit.
(11)	Mecha. Unit	Fig. 9-1 Fig. 9-2	Open the Cassette Cover (S). Unlock the Lock lever for Cover. Open the Cassette Cover (C). 3-Screws (A) 3-Screws (B) Remove the Mecha. Unit.

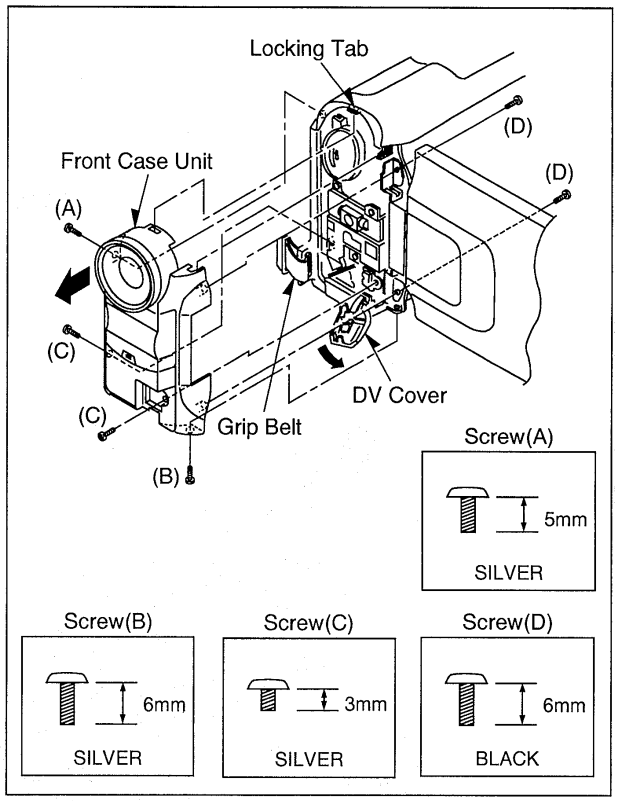


Fig. 1

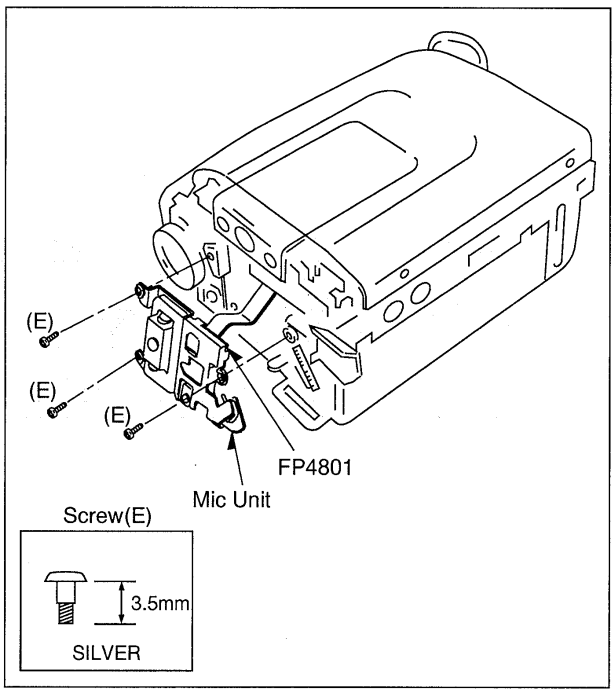


Fig. 2

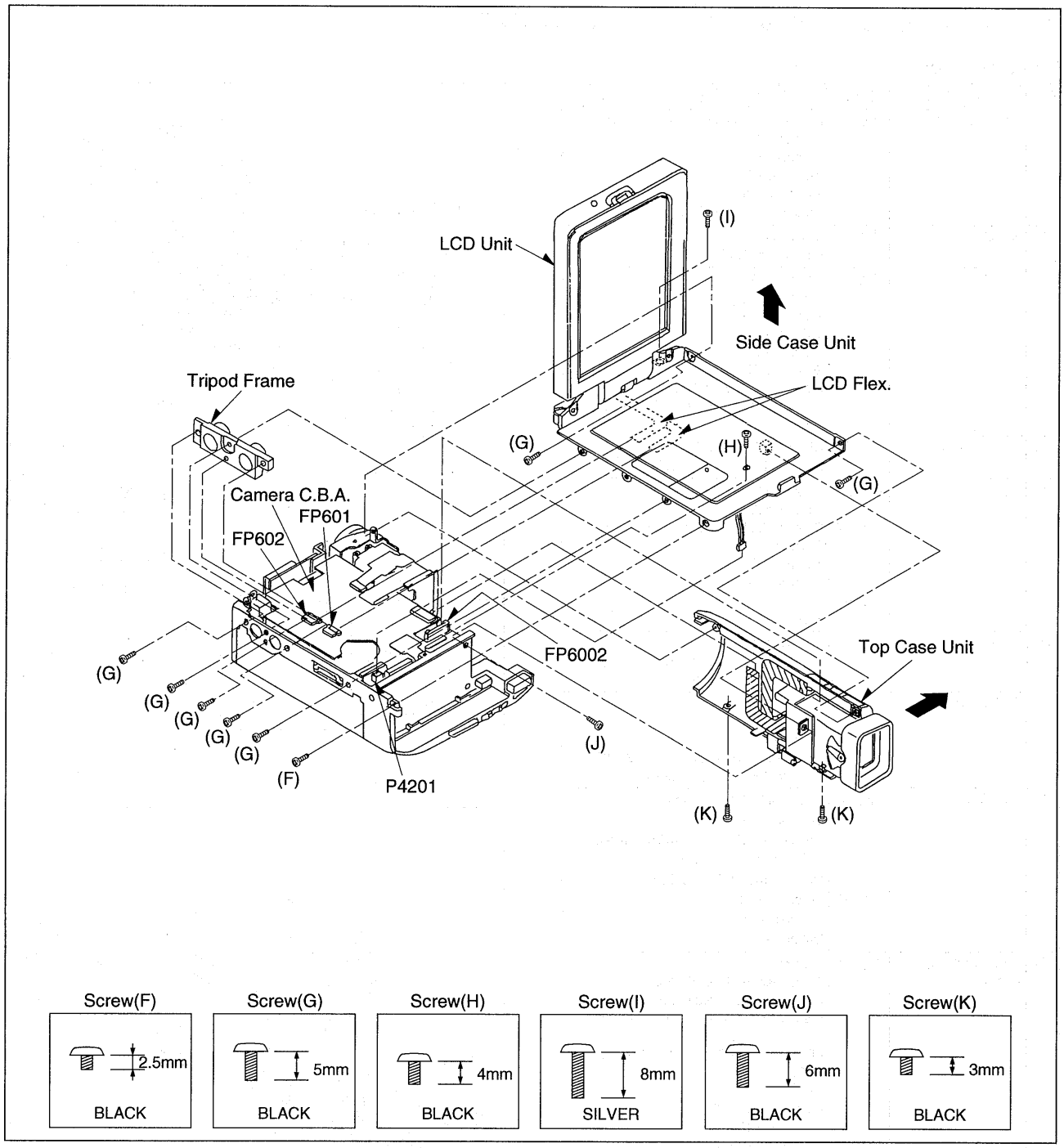

LCD Unit
(I)
Side Case Unit
Tripod Frame
LCD Flex.
(G)
(H)
(G)
Camera C.B.A.
FP601
FP602
FP6002
Top Case Unit
(G)
(G)
(G)
(G)
(G)
(F)
P4201
(J)
(K)
(K)
Screw(F)
2.5mm
BLACK
Screw(G)
5mm
BLACK
Screw(H)
4mm
BLACK
Screw(I)
8mm
SILVER
Screw(J)
6mm
BLACK
Screw(K)
3mm
BLACK

Fig. 3

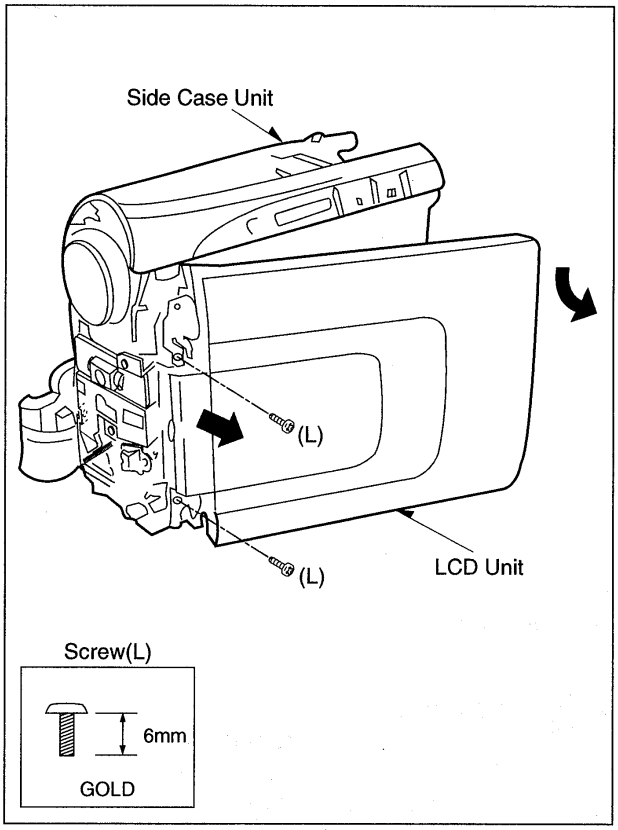


Fig. 4-1

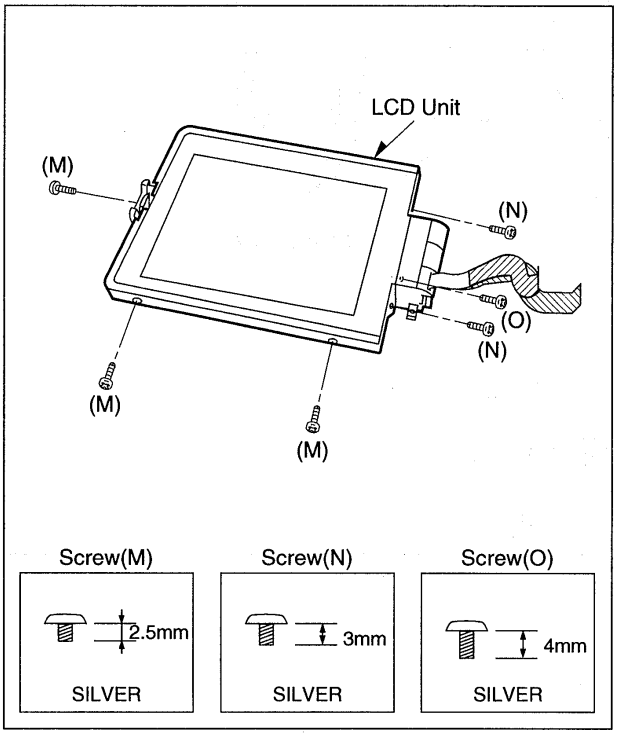


Fig. 4-2

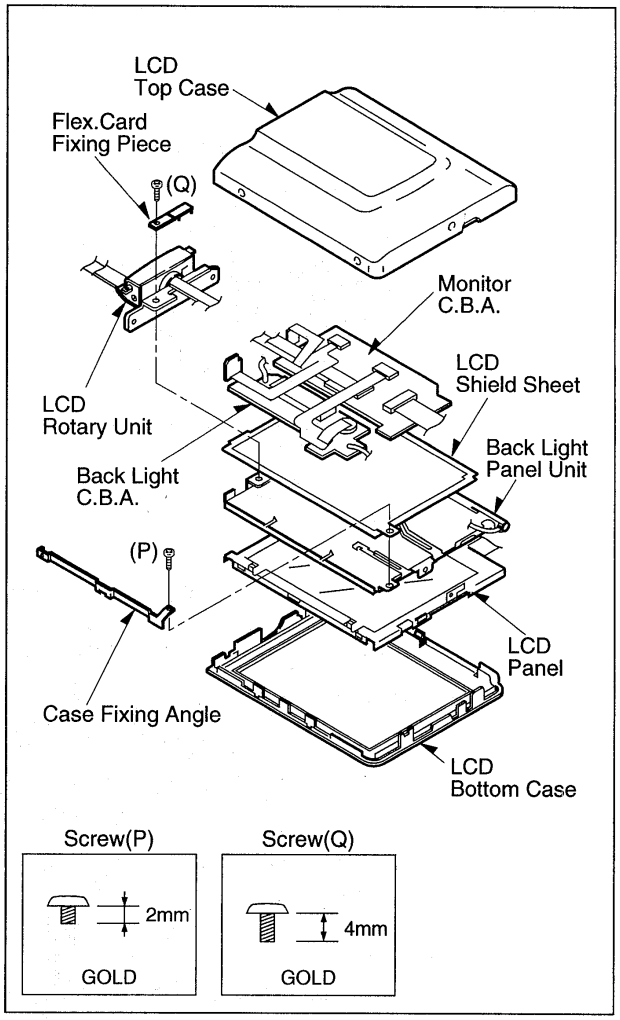


Fig. 4-3

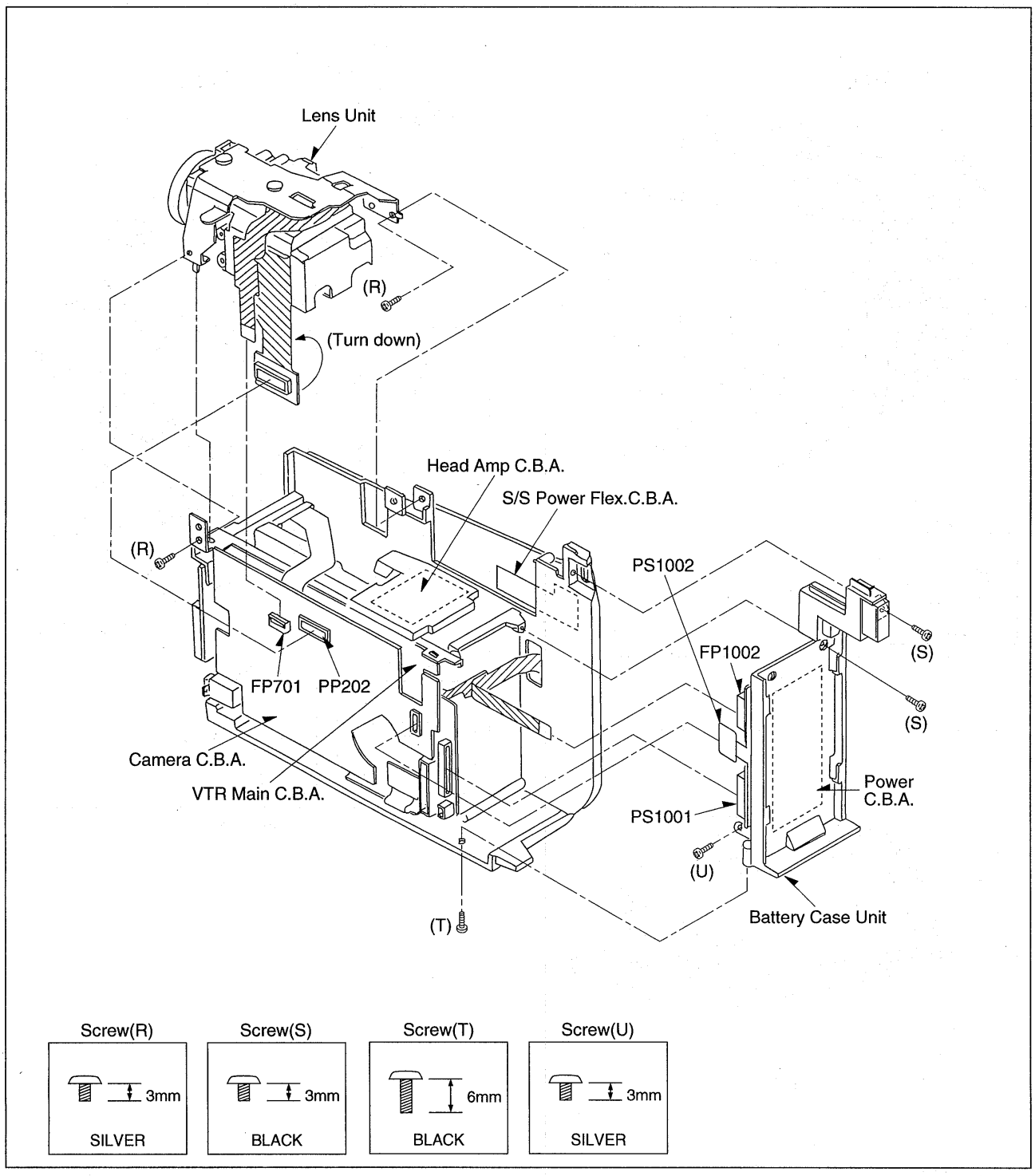

Lens Unit
(R)
(Turn down)
Head Amp C.B.A.
S/S Power Flex.C.B.A.
(R)
PS1002
FP1002
(S)
(S)
FP701
PP202
Camera C.B.A.
VTR Main C.B.A.
Power C.B.A.
PS1001
(U)
(T)
Battery Case Unit
Screw(R)
3mm
SILVER
Screw(S)
3mm
BLACK
Screw(T)
6mm
BLACK
Screw(U)
3mm
SILVER

Fig. 5

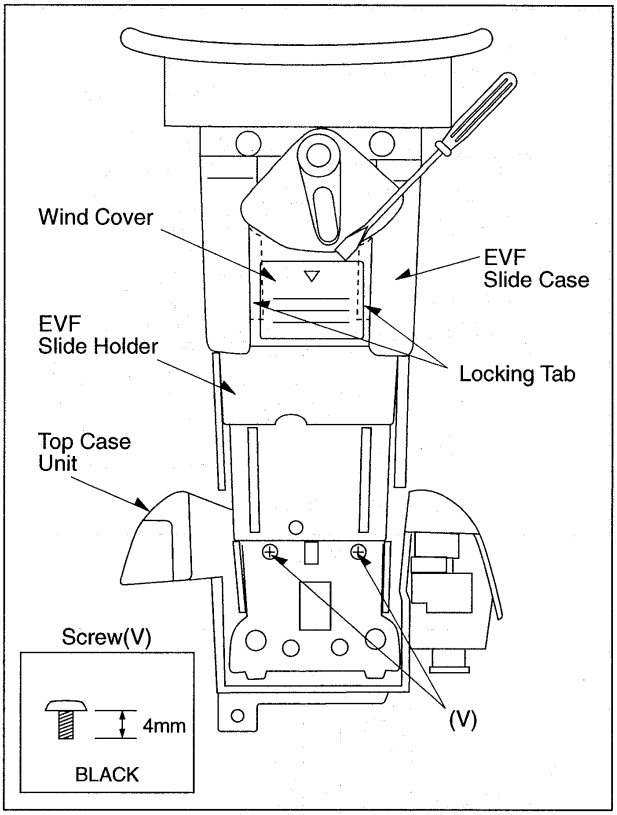


Fig. 6-1

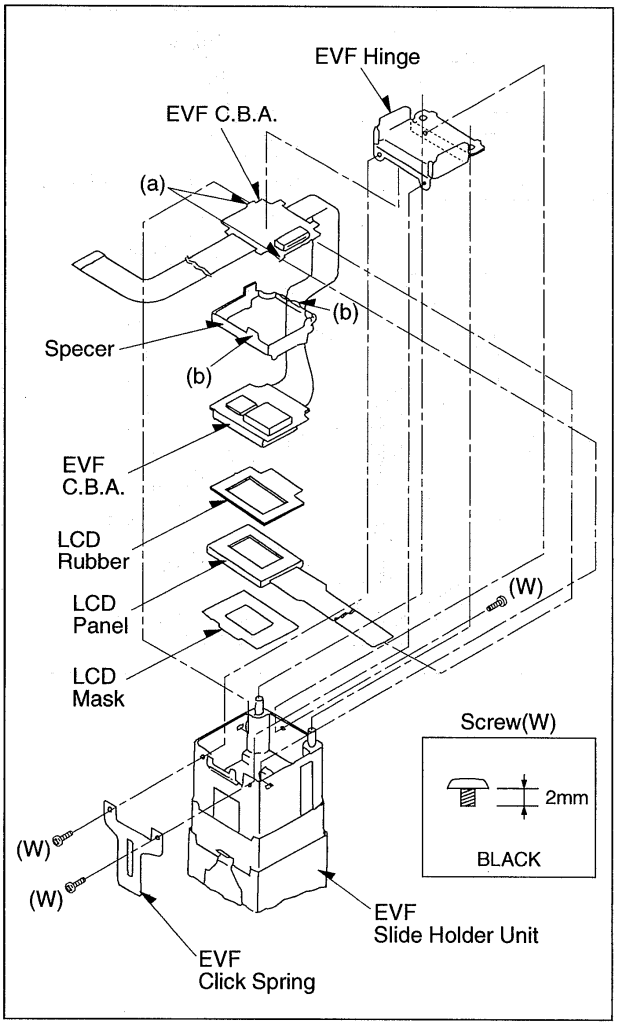


Fig. 6-2

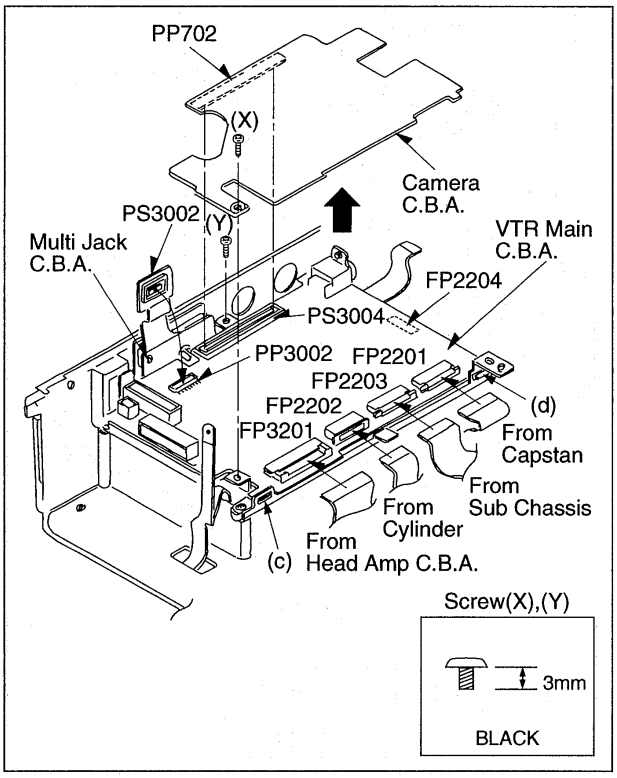


Fig. 7-1

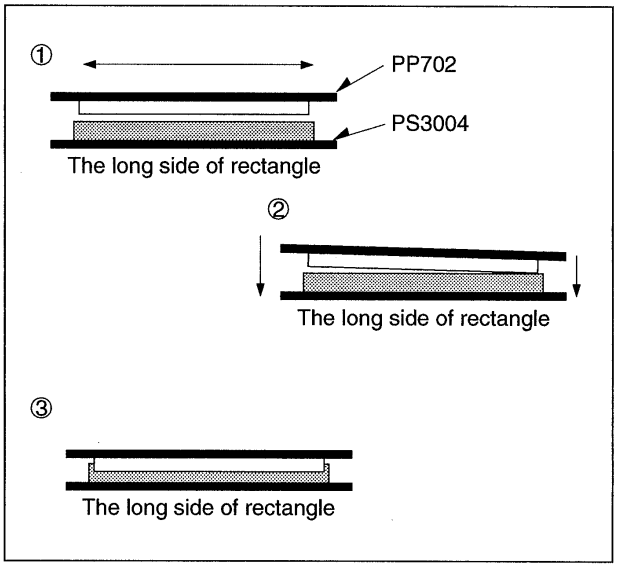


Fig. 7-2

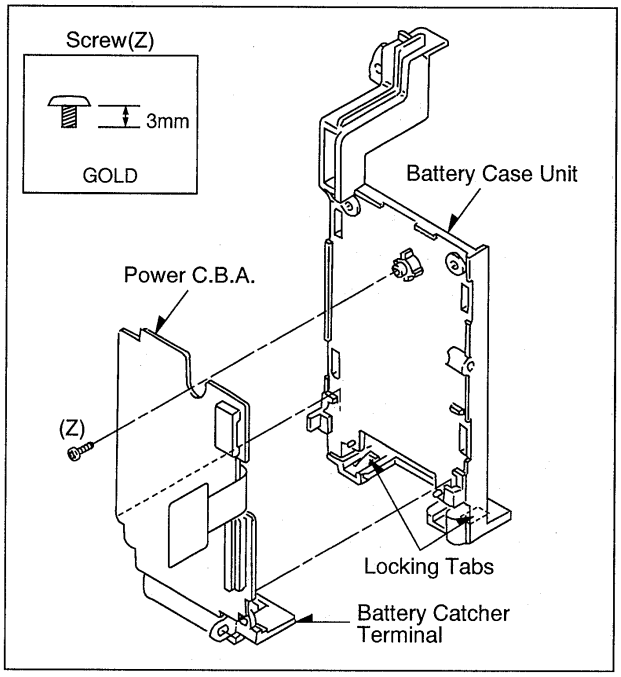


Fig. 8

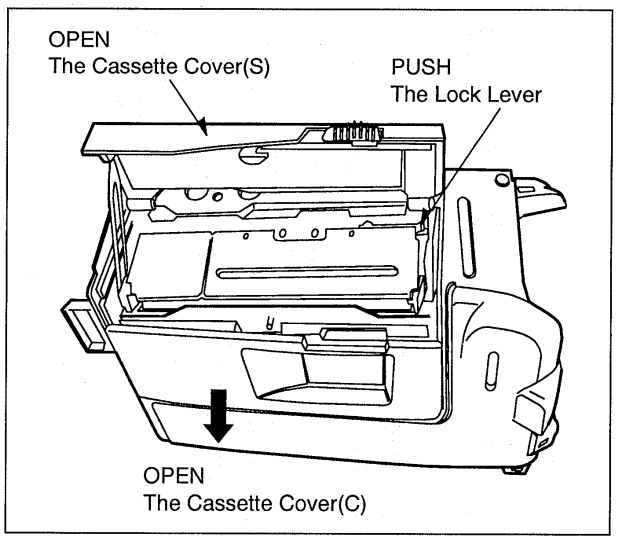


Fig. 9-1

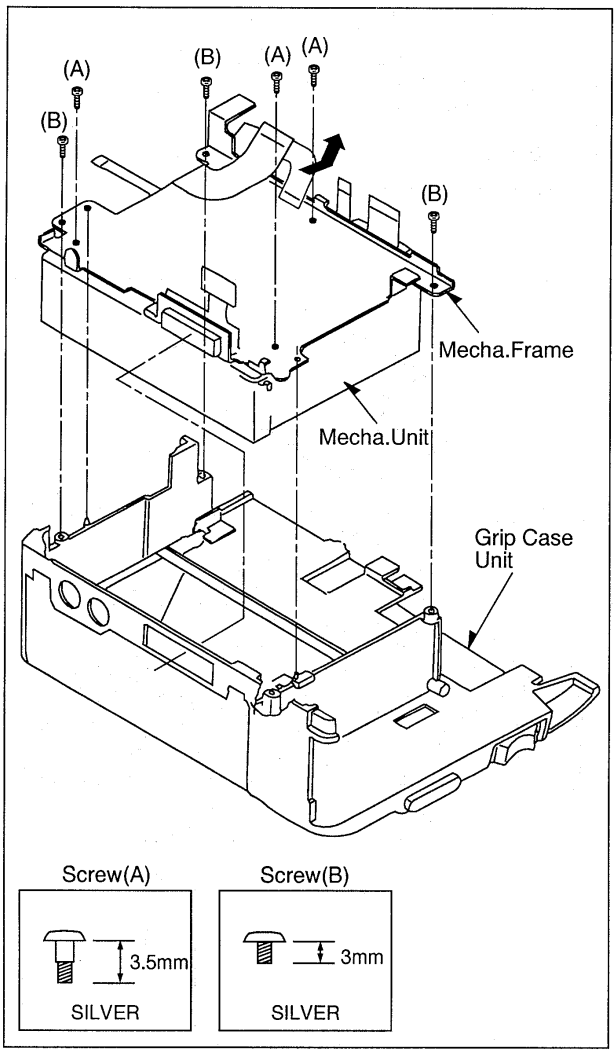


Fig. 9-2

2-3. DISASSEMBLY PROCEDURES OF LENS UNIT

The following flowchart describes order or steps for removing the lens units and certain printed circuit boards in order to make access to the item needing service.
To reassemble the unit follow the steps in reverse order.

1. CDS/AGC C.B.A. with CCD Unit	
2. CCD Cushion & Crystal Filter	Ref.-No. 301/303
3. Lens Flex. & Sensor/Z.Motor/Iris	Ref.-No. 304-1/304-2/304-5
4. Main Freme Unit	Ref.-No. 304-8
5. 4th Moving Frame Unit & Guide Pole	Ref.-No. 304-7/304-4
6. 3rd Moving Frame Unit	Ref.-No. 304-9
7. 2rd Moving Frame Unit	Ref.-No. 304-6
8. 3rd Lens Frame Unit	Ref.-No. 216

Note 1:
Inside of 4th Moving has actuator coil, this coil connect to the Lens Flex.
Please handle the Lens Flex. with care durring disassembly and assembly.

Note 2:
Each Ref.-numbers are equivalant to number on Fig. L1 and Parts-List.

Fig. L1

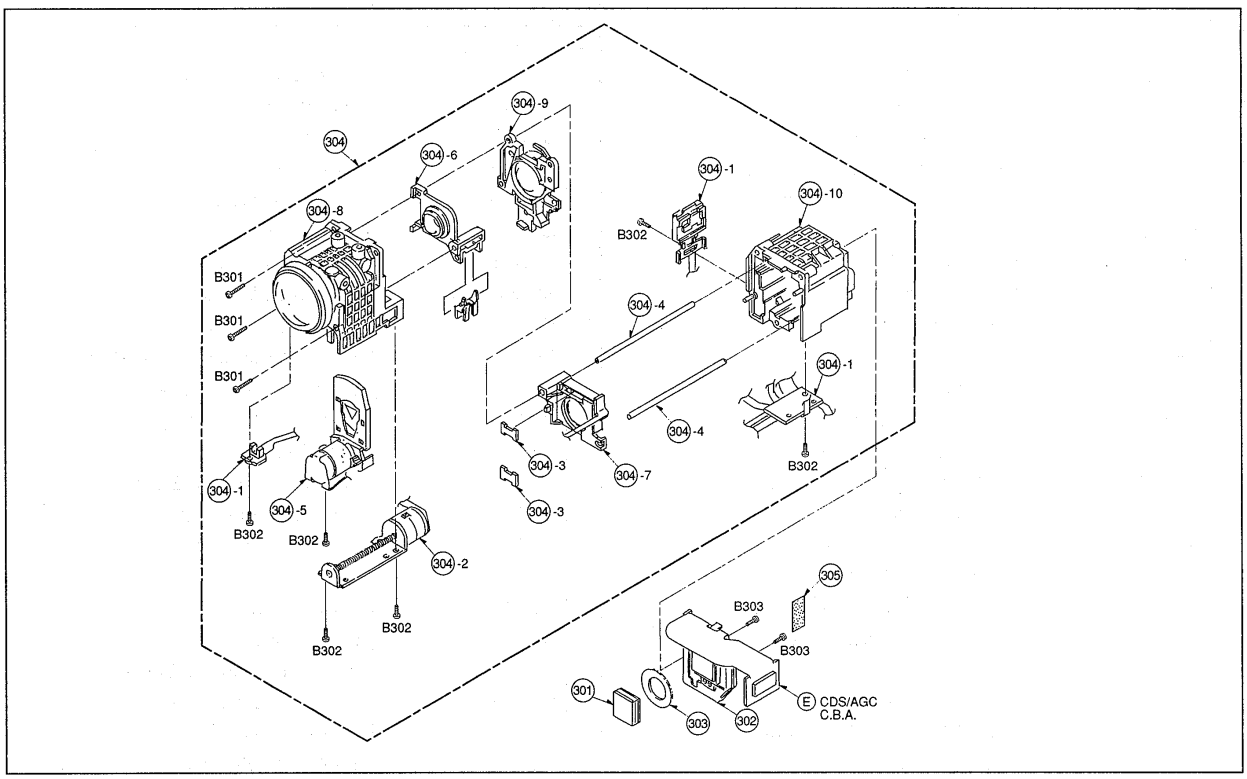


Fig. L2

SECTION 3
BLOCK DIAGRAMS & SCHEMATIC DIAGRAMS
3-1. ABBREVIATIONS

INITIAL/LOGO		ABBREVIATIONS
A	A GND	Analogue GND
	A HASW	Audio Head Amp Switching Pulse
	A HSW	Audio Switching Pulse
	A MUTE	Audio Mute
	A ORP	Audio Overlap Pulse
	A. TR	Auto Tracking
	A0-8, 0-17	Memory Address
	A3V2	AD Converter Reference Voltage
	AB0-4	Address Bus
	AB0-4, AB12-15	Address Bus Line 0-4, 12-15
	ABSF	Focus Encoder Input
	ACI	Analogue Channel Cording IC
	AD	AD Converter
	AD	Auto Date, Analogue Digital Converter
	AD CLK	AD Clock
	AD REC	Audio Delayed REC
	AD0-6	Address
	AD0-6, ADR0-6	Address Data Line
	ADCLK	Analogue Digital Converter Clock
	ADCNT	Analogue Digital Control
	ADCS	Analogue Digital Chip Select
	A-DET	Audio Detect
	ADREC	Audio Delaied Rec
	ADUB	Audio Dubbing
	AE	Auto Expose
	AECNT	Auto Expose Control
	AEE(H)	Audio E-E (H)
	AEH	Audio Erase Head
	AEIRQ	Auto Expose Interrupt Request
	AF/MF	Auto Focus/Manual Focus
	AF DIS CS	AF DIS Chip Select
	A-FADE(L)	Audio Fade (L)
	AF-AMP	AF HALL Bias
	AFCS	Auto Focus Chip Select
	AFRP	Audio PLL Voltage Control
	AF-VN	Zoom Encoder V-Ref (–)
	AF-VP	Zoom Encoder VREF (+)
	AGC	Automatic Gain Control
	AGCCNT	Automatic Gain Control Control
	AGND	Analogue Ground/Audio Ground
	AGS	Anti Ground Shooting
	AH(P) / (R)	Audio Head (Play) / (Record)
	AHASW	Audio Head Amp Switch Pulse
	AHSW	Audio Head Switch Pulse
	AI, AO	Buffer Input, Output
	AIBCK	Bit Clock (to A/D Converter)
	AIDAT	Serial Data (to A/D Converter)
	AILRCK	L/R Clock (to A/D Converter)
	AIMCK	Master Clock (to A/D Converter)
	ALC CNT	Auto Level Control Control
	ALC MAIN	Auto Level Control Drive
	ALE	Address Latch Enable
	A-LOCK	Full Auto Switch
	A-MUT(H)	Audio Mute (H)
	ANLPTH	Analogue Loop Through High
	AORP	Audio Overlap Pulse
	APCNT	Aperture Control
	APS	Auto Power Save
	ART VH	Artifical Vertical Sync
	AT CNT	Automatic Tracking Gain Adjust
	ATF	Automatic Track Finding
	ATFCLK	41.85MHz Clock
	ATFG	Auto Track Gain
	ATL	Auto Lock Select
	ATN	Absolute Track Number
	ATR OFF(H)	Auto Tracking Off (H)
	ATV	Advanced TV
	AUDIO(N)	Audio (Normal)
	AUX	Auxiliary
	AVDD	Analogue VDD
	AVSS	Analogue Ground
	AWTB	Auto White Balance B-Y
	AWTR	Auto White Balance R-Y
B	BACK	Back-up
	BACK UP	Microcomputer Back-up
	BACK VDD	Back-up Power
	BATT	Battery
	BATT ALARM	Battery Alarm
	BATT REF	Reference Voltage for Battery
	BCB	B Carrier Balance
	BCBM(B-Y)	B-Y Carrier Balance
	BCBM(R-Y)	R-Y Carrier Balance
	BD0-7	REC/Play In/Out Buss
	BDCK	Standard Bus Data Clock (9MHz)
	BDEN	Standard Bus Data Enable
	BEND	Data Block End Request
	BF	Burst Flag Pulse
	BFA	Burst Flag Pulse for Encorder
	BFO/BFI	Burst Flug Input/Output
	BI, BO	Buffer Input, Output
	BL	Back Light
	BL ON	Back Light ON (L)
	BL4V	Back Light 4V
	BLC 0, 1	Back Light Y Control Out, In
	BLDI/O	Back Light Drive Input/Output
	BLK	Blanking Pulse
	BLKA	Blanking for Encorder
	BLKA	Blanking Pulse for Encorder
	BLKI/O	Blanking Pulse In/Out

	INITIAL/LOGO	ABBREVIATIONS
	BLKZ	Blanking Pulse for Zoom Encorder
	BM	Balance Modulator
	BQUIET	Bus Out Control Signal
	BUF IN/OUT	Buffer In/Out
	B-Y KB	B-Y Carrier Balance
	B-YO	B-Y Signal Out
C	C A In/Out	Pre-Aperture In/Out
	CAPSTP	Capstan Stop Flag
	C CNT	Colour Control
	C SYNC	Composite Sync Signal
	C/N	Carrier/Noise
	C0-7, C00-07	Chrominance Signal 0-7
	CAGAIN	Aperture Gain Control
	CAM	Camera
	CAM CLK	Camera Clock
	CAM RST	Camera Reset
	CAM SIOC	Camera Serial In/Out Contol
	CAM T	Camera Test
	CAM TL	Capstan Trque Limit
	CAP EC	Capstan Trque Control
	CAP P(H)	Capstan Power On (H)
	CAP R/F/S	Capstan Reverse (H)/Stop (M)/Forward (L)
	CAP SW	Capstan Power Control Switch
	CAPSTP H	Capstan Stop Flag (Stop High)
	CAPVM	Capstan Motor Current
	CAPVS	Capstan Motor Power Control Switch
	CAS	Compresion, Audio Process, Shuffling/Deshuffling
	CAS	Memory Address Strobe (Active Low)
	CASDOWN, DWN	Cassette Down (L)
	CB, CR	Chroma B, Chroma R
	CBLK	Composite Blanking Pulse
	CC	Channel Cording
	CCA	Curent Drive Control
	CCA	Current Control Amp
	CCD	Charge Coupled Devise
	CCW	Counterclockwise
	CD SP0-7	Digital Chroma
	CDS	Correlate Double Sampling Signal
	CDS1, 2	Sampling Pulse for CCD Output Signal
	CE	Chip Enable
	CE	Control Pulse Erase
	CEC	Capstan Error Code
	C-ERA(H)	Control Erase (H)
	CFEM	Chrominance Memory Signal
	CFM	Chrominance Field Memory
	CFM1-4	Chroma Field Memory Signal
	CG CLK	Character Generator Clock
	CG CLK DATA	Clock Generator Data
	CG DATA	Character Generator Data
	CGC	Chrominance Gain Control
	CGCS	Character Generator Chip Select
	CGO	Character Generator Serial Data
	CH	Charge

	INITIAL/LOGO	ABBREVIATIONS
	CH1	Channel 1 (Odd Field)
	CHR	Character
	CHR BACK	Character Back-up
	CHR MIX	Character Mix
	CI, CO	Buffer In/Out
	CI,CO	Buffer Input & Output
	CIF	Control Signal Forward Input
	CIF, CIR	Positive Control Pulse, Negative Control Pulse
	CIR	Control Signal Reverse Input
	CK	Clock
	CL/CLK	Clock
	CLASS	Classeffication Signal for Compress (DCT/VLC)
	CLASS 0.1	Class Control Signal Durring DCT/VLC
	CLK135	13.5MHz System Clock
	CLK18	18MHz System Clock
	CLK2	Clock 2 (824XFH: 12.875MHz)
	CLK246	24.576MHz Clock
	CLK27	27MHz System Clock
	CLK450	450KHz Clock
	CLKDCLK	Digital Clock
	CLK-PH	Clock Phase Control
	CLK-REF	Reference Clock
	CLP-RST-H	Clamp Reset High Signal
	CLX	TFT X-axis Transmission Clock
	CLX, CLX1-4	Shift Clock for X Direction (LCD Panel)
	CLY	Shift Clock for Y Direction (LCD Panel)
	CLY	TFT Y-axis Transmission Clock
	CLY FG	Cylinder FG Signal
	CMEMO0-3	Chroma Memory Output Signal 0-3
	CMIX	Character Mix
	CMO	Chrominance Memory Output
	COMPC	Position Detection Pulse
	COM RDY	Serial Enable Signal
	CMODE	Camera Mode
	CNCLK	Clock
	CNR	Chrominance Noise Reduction
	CNT, CONT	Control
	CO	Control Out
	CO0-7	Chrominance Output 0 to 7 (Digital)
	COM	Common
	COM RDY	Serial Transmission Enable
	COMB	Comb Filter
	COS EQ	Cosin Equalizer
	CP	Clamp Pulse
	CP ON(H)	Camera Power On(H)
	CP2, 20	Clamp Pulse
	CP2A, CP2O	Encoder Clamp Pulse
	CPN	Component Signal
	CPOB	Clamp Pulse for Optical Blanking
	CPS	Composite Signal
	CPV	Gate Scan Clock
	CR OUT	Pre Apature Out
	CR POW SW	Camera Remote Power On Switch
	CRA	Aperture Gain Control

	INITIAL/LOGO	ABBREVIATIONS
	CRA	Pre Apature Gain Control
	CRST	Camera Reset
	CS	Chip Select
	CS 0-7	Chrominance Signal Out 0-7
	CSEL	Clock Phase Select
	CSI 0-7	Chrominance Signal In 0-7
	CTSW	Crosstalk Switch
	CURR	Current
	CW	Clockwise
	CYL EC	Cylinder Motor Trque Control
	CYL PG	Cylinder Motor PG
	CYL VM	Cylinder Motor Current or Power
D	D CLK	Digital Clock
	D MODE	Digital Mode Switch Signal
	D01-03	Zoom 01-03
	DA UV SEL	D/A Convertor U/V Select
	DAC	Digital Analogue Converter
	DAG	Digital Analogue Ground
	DB0-7	Data 0-7
	DB0-7	Microprocessor Data
	DCC	DC Clamp Control
	DCCNT	DC Control
	DCI	Digital Channel Cording IC
	DCLR	Digital Clear
	DCP	Digital Clamp Pulse
	DCS-CLK, DA	CAS & DV I/F Serial Clock
	DC-STP1	DCS Serial Start
	DC-STP2	DCS Serial Stop
	DCT	Discrete Cosine Transform (Compression)
	DCX7	Serial Data
	DEDP 0-3	Playback Data
	DEDR 0-3	Rec Data
	DEMO	Demodulation
	DEMP	A/D Convertor Empahsis Control
	DEMP	De-Emphasis
	DFD 0-7	Encode Data In/Out Between Shaffling Memory
	DFD0-7	Encode Input/Output Signal for Shuffling Memory
	DIBDCK	Bit Clock
	DICLK	Digital Clock
	DIDAT	Serial Data
	DIDAT	Serial Data Durring Digital Audio In
	DIF	Digital Interface
	DILRCK	L/R Clock
	DILRCK	Serial Clock Durring Digital Audio In
	DIMCK	Master Clock
	DIMCK	Mater Clock Durring Digital Audio In
	DIO 1-8	Data In/Out
	DIOS	Data In/Out Select Control Signal
	DIOS	Select Signal for Digital In/Out
	DIS	Digital Image Stabilizer
	DIS R/B	Digital Image Stabilizer Read (H)/Busy (L)
	DIS R/B	DIS IC Rady/Busy
	DIS/KAND	Digital Image Stabilizer/Sensitivity

	INITIAL/LOGO	ABBREVIATIONS
	DISCS	Dis Chip Select
	DISP	Display
	DL	Delay Line
	DOBCK	Audio A/D Convertor Bit Clock
	DOCTL	Data Output Control Signal
	DODAT	Serial Data (to D/A Converter)
	DOLRCK	Audio A/D Converter LR Clock
	DOLRCK	L/R Clock (to D/A Converter)
	DOMCK	Audio A/D Converter Master Clock
	DOMCK	Master Clock (to D/A Converter)
	DQ 1-16	Memory Data
	DRAM CAS	D-RAM Colum Address Strobe
	DRAM OE	D-RAM Out Enable
	DRAM RAS	D-RAM Read Address Strobe
	DREC	AV Delayed REC Start Pulse
	DRK	Dark (LPF Switch for Auto Focus)
	DS1, 2	Double Sampling Pulse
	DSF 0-7	Data In/Out for Shaffling Memory
	DSF 0-7	Input/Output Data to Shuffling Memory (18MHz)
	DSP	Digital Signal Processor
	DSP R/B	DSP IC Rady/Busy
	DSP-48K-H	DSP IC Clock Select
	DSTB	Data Stobe Signal
	DSV	Digital Sum Variation
	DV	Digital Video
	DVB	Digital Video Broadcast
	DVC	Digital Video Cassette
	DVDD	Digital VDD
	DVIO	Digital Video Input Output
	DVSS	Digital Ground
	DX	Shift Data for X Direction (for LCD)
	DY	Shift Data for Y Direction (for LCD)
	DY	TFT Y-axis Shift Data
	DZ	Digital Zoom
E	E Snap	Electric Snap Shot
	E ZM	Electric Zoom
	E2 CS or E2P CS	EEPROM Chip Select
	E2 R/B	EEPROM Rady/Busy
	E2P	EEPROM
	EARP	Earphone
	EC	Torque Control
	ECC	Error Correction Cording
	ECM	Electric Condencer Mic
	ECR	Reference Voltage for Capstan Torque
	EDA	Error Correction, DCI, ATF Servo
	EE CS	EEPROM Chip Select
	EE R/B	EEPROM Read (H)/Busy (L)
	EEPROM	Electric Erasable Programable Read Only Memory
	EIS	Electric Image Stabilizer (DIS)
	EMP	A/D Convertor Emphasis Control
	ENAB	Enable
	ENV	Enverope
	EOB	End of Block

	INITIAL/LOGO	ABBREVIATIONS
	EQ	Equalizer
	EVF	Electric View Finder
	EXT DC	External DC (AC Adaptor)
	EXT DC(H)	AC Adaptor DC (H)
	EXT NOREG	AC Adaptor 6V
	EXT S DATA	Serial Data for Edit
	EXT SCK	Serial Clock for Edit
	EZOOM	Electric Zoom
F	F ENC	Lens F-Value
	FACT MODE	Factry Mode (not used in the service)
	FB	Feed Back
	FC	Saw Tooth Signal In
	FCK	Clock
	FCO	Saw Tooth Signal Generator
	FENC	Focus Encoder
	FEND	Frame End Pulse
	FH2B	FH/2 (15.625KHz / 2=7.8125KHz)
	FIX OSD	Auto Tracking Off (H)
	FLICK	Flicker Output
	FM	Field Memory
	FM0-7	Field Memory 0-7
	FMCO0-3	Field Memory Chrominance Out 0-4
	FMDIR	Focus Motor Direction
	FMOEM	Field Memory Enable
	FMOEO	Field Memory Enable
	FMT1-4	Focus Motor Terminal 1-4
	FMY00-07	Field Memory Luminance Out 0-7
	FMYI0-07	Field Memory Luminance In 0-7
	FNO	F Value
	FPS	Frame Refference Signal
	FR	Capstan Reverse High
	FRP	Frame Refference Pulse
	FRPSO	Frame Start Pulse
G	G1, G2, G3	Gap 1, 2 and 3
	GCA	Gain Control AMP
	GCNT	Gain Control
	G-CNT	AGC Adjustment
	GCTRL	Gain Control
	GENE	Generator
	GF	FG AMP Terminal
	GSW	Ground for Switching Power
H	H/M/N	Hi-Fi / Mix / Normal
	H/N	Hi-Fi / Normal
	H1, 2	H. CCD Drive Pulse
	HAP	Horizontal Aperture
	HASW	Head AMP Switching Pulse
	HB	Hall Bias
	HBR SET	High Brightness Set
	HBRST	High Brightness Set
	HCLR	High Clear
	HCP	Shift Clock for Horizontal Drive

	INITIAL/LOGO	ABBREVIATIONS
	HD	Horizontal Drive Pulse
	HDTV	High Definition TV
	HEX	Hexadecimal
	HG	Hall Gain
	HID	Head Switching Pulse
	HLT	High Bright Signal
	HALL IN(+), (–)	Input Signal from Hall IC
	HP	Headphone
	HPF	High Pass Filter
	HSE	Modulated Data Output
	HSP	Timing Pulse for Shaffling Memory
	HSS	Horizontal Sync Signal
	HSW	Head Switching Pulse
	HS-WT	High Speed Zoom
	HSZ	High Speed Zoom
I	I/F	Interface
	I-2 C	Inter Integrated Circuit
	ID(H)	Wide Television (H)
	IMP	Inter Microprocessor Protocol
	INF	CCD Input Signal 1
	INF	Input Frame Signal
	INS	CCD Input SIgnal 2
	INTER	Interval Recording
	INV	Inverter
	IOU	R-Y Analogue Signal Output
	IOV	B-Y Analogue Signal Output
	IOY	Y Analogue Signal Output
	IR	Infrared Rays
	IRDET	Infrared Ray Detection
	IREF	Current Adjustment Terminal
	IRIS/SH	Iris / Shutter Control
	IRQ	Interrupt Request
	ITI	Insert & Track Information
J	JPEG	Joint Photographic Image Cording Experts Group
K	KANDO	Digital Gain Up
	KB	Carrier Balance
	KEY IN	Key Scan
	KND	Digital Gain Up
	KNEE	Luminance Compensate
L	LCD	Liquid Crystal Display
	LCD P(L)	LCD Power On (L)
	LD	Load Pulse
	LDD	Liquid Direct Drive
	LEDCNT	LED Control
	LI-BATT	Lithium Battery
	LOAD	Loading
	LOAD F, R	Loading Direction (F: Forward / R: Reverse)
	LPF	Low Pass Filter
	LRMONO	Monoral Audio (L + R)
	LSB	Least Significant Bit

INITIAL/LOGO		ABBREVIATIONS
	LVL	LPF Switch for Auto Focus
M	M1-3	Motor Coil Terminal 1 to 3
	MA0-5	Microprocessor Address Data 0-5
	Mbps	Megahertz Bit Per Second
	MD	Modulation
	MD0-7	Microprocessor Data 0-7
	MDT0-7	Microprocessor Data 0-7
	ME (TAPE)	Metal Evaporated (Tape)
	MENB	Focus Motor Enable
	MFF	Manual Focus Far
	MFN	Manual Focus Near
	MHSYNC	Monitor Horizontal Sync Signal
	MIC	Memory In Cassette
	MIG	Meta In Gap
	MIX N.R.D.	Non Rec Data Mix
	MOD	Modulation
	MOUT	Mic Out
	MP (TAPE)	Metal Particle (Tape)
	MPEG	Moving Picture Image Cording Experts Group
	MPEG2	Moving Picture Image Cording Experts Group Phase 2
	MRST	Focus Motor Reset
	MSB	Most Signal Bit
	MVSYNC	Monitor Vertical Sync Signal
N	N/F	Near/Far Focus
	N/P	NTSC/PAL
	NB1-3	Base for NPN Transistor
	NC	No Connection
	NC1-3	Corrector of NPN Transistor
	NCLR	Power On Reset
	NCP1	Clamp Pulse
	NCP2+VDH	Clamp Pulse + Horizontal Drive Pulse
	NCP2+VDM	Clamp Pulse + Gate Pulse
	NDE	Non Liner De-Emphasis
	NE	Emitor of NPN Transistor
	NLE	Non Liner Emphasis
	NR	Noise Reduction
	NRD	Non Rec Data
	NRD BLK	Non Rec Data Blanking
	NRD CLK	No Rec Data Clock
	NRE	Read Enable Input (Low Active)
	NWE	Write Enable (Low Active)
O	OB	Optical Black
	OBCNT	Optical Black Control
	OBREF	Reference Voltage for Optical Black Control
	OE	Output Enable
	OFH	Horizontal Counted Down Clock Signal (Reference)
	OFS	Offset
	OP	Operation AMP Output
	OSD	ON Screen Display
	OVL	Overlap Pulse
	OZ	Optical Zoom

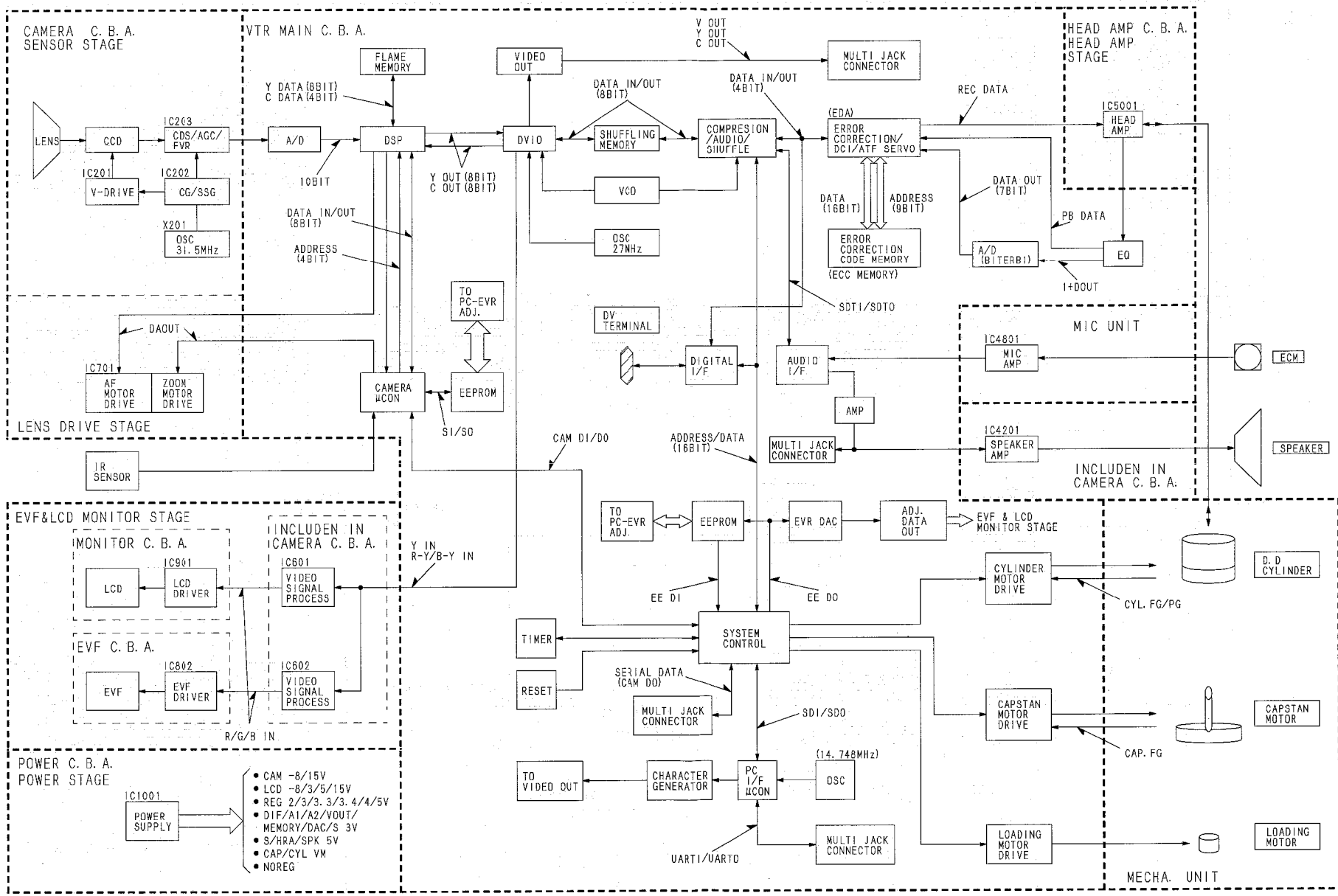
INITIAL/LOGO		ABBREVIATIONS
P	P SW	Power Switch
	PB1-3	PNP Base 1-3
	PBCTL	Play Back Control
	PBCTL	Pre-Branking Control
	PBH	Head Amp Switch
	PBLK	Pre-Blanking (Pulse)
	PC1-3	Corrector of PNP Transistor
	PCBM	Carrier Balance
	PCH	Phase Compensator (Hall AMP)
	PCI	Phase Compensator (Current)
	PCO	Phase Compensator Out
	PCS	Switching Power Control
	PCV	Phase Compensator (Voltage)
	PE	Emitter of PNP Transistor
	PED	Pedestal
	PEDECNT	Pedestal Control
	PENO	Alarm (L)
	PFP	Pilot Frame Position
	PGA, B	Power Ground A, B
	PGC	Pulse Generator Comparator
	PGI	Pulse Generator Input
	PGMM	Pulse Generator Monostable Multivibrator
	PGO	Output of Pulse Generator AMP
	PMODE	Select Signal for Normal / Wide Screen
	PON	Power On
	POR	Power On Reset
	POSCOM	Common Position
	PREAMP	Pre-AMP
	PREBLK	Pre-Blanking
	PT	Protect for V Voltage
	PWM	Pulse Width Modulation
	PWMB	Pulse Width Modulation Pulse
Q	Q2H	Source Output Select
R	R CTL P	Recorded Control Pulse (+)
	R CTL R	Recorded Control Pulse (–)
	R/B	Read/Busy
	R/L	Direction Control for Data Transmition
	RA	Recording AMP
	RA1	Rec AMP 1
	RAC AC	Rec Audio Current
	RAD	Read Address Data
	RAE	Read Address Enable
	RB	Read Busy
	R-B	R Bias
	RCB	R Carrier Balance
	RE	Read Enable
	RE(F), (S)	Rotary Erase Head Transformer
	REB	R Bias
	REC CC	Rec Current Control
	REC CCNT	Rec Current Control
	RECCTRL	Recording Control Pulse
	RECI	Rec Amp Switch

	INITIAL/LOGO	ABBREVIATIONS
	RENCF	Lens Control (Forward)
	RENCR	Lens Control (Reverse)
	RERASE	Rotary Erase Head
	RGBIV1-2	1V Inverted Signal 1-2
	RGO R/G OFF	Offset Voltage for AWT R
	RSF	Capstan Direction (Reverse / Stop / Forward)
	RST	Reset
	RSTB	R Strobe
	RSTPWD	Reset Power Down Input
	RSTR	Reset Read
	RSTW	Reset Write
	RT	Saw Tooth Terminal
	RVCO	Resister for Oscillation
	RW	Read Write
	RWAE	Read Write Enable
S	S PHOT	Supply Photo Transistor
	S/H	Sampling Hold
	S/S	Start/Stop
	SBD	Serial Data
	SBI	Serial Data Input
	SBO	Serial Data Output
	SBT	Serial Clock
	SCAN0-5	Key Scan 0-5
	SCK	Serial Clock
	SCR	Search
	SCR, S.C.R.	Still Cue Review
	SEG.	Segment
	SET	White Balance Set
	SH/IRIS	Shutter/Iris Control
	SHIFT	Capasitor for Phase Shift
	SI	Serial Data Input
	SIC	Shift In Clock Input
	SIOC	Serial In/Out Control
	SMCE	Shaffling Memory Chip Enable
	SMRS	Shaffling Memory Read Strobe
	SMWE	Shaffling Memory Write Enable
	SMWS	Shaffling Memory Read Strobe
	SNAP	Snap Shot
	SNS LED	Sensor LED
	SO	Serial Data Output
	SPA	ATF Smapling Pulse
	SPEN	8 Bit Shift Register Enable
	SPK	Speaker
	SPO	Reset for Switcing Power
	SPST	8 Bit Shift Register Strobe
	SREELP	Supply Reel Pulse
	SRT	Start
	SSA	Start Sync block Area
	SSW	Select Signal for Low Pass Filter
	ST5V	Safety Tab 5V
	STAB	Safety Tab Switch
	STB	Stand by Signal
	STB	Strobe

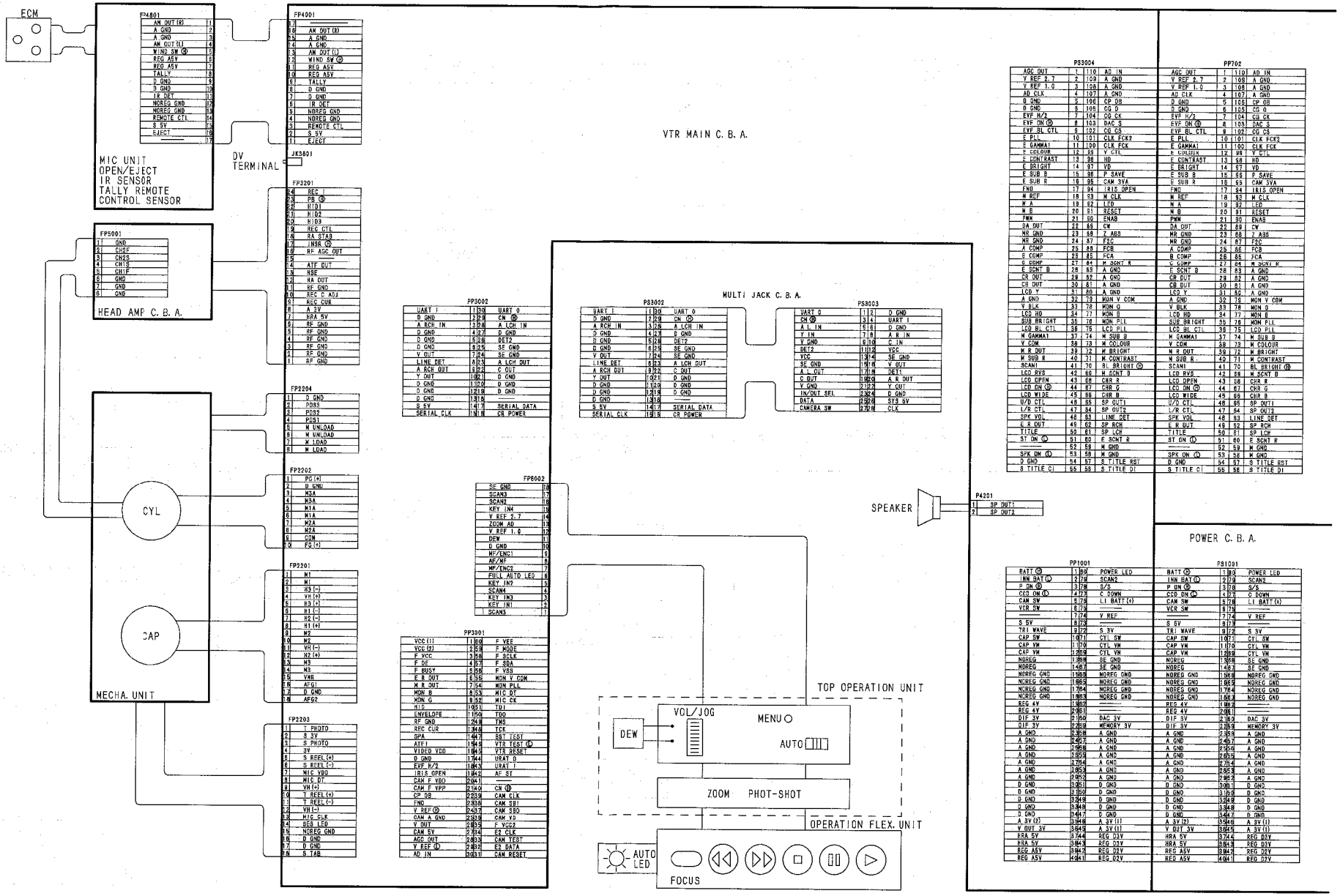
	INITIAL/LOGO	ABBREVIATIONS
	SWB	Switching Pre-Drive Pulse
	SYL EC	Cylinder Torque Control
	SYL FG	Cylinder FG
T	T PHOT	Take-up Photo Transistor
	TBC	Time Base Conntrol
	TFT	Thim Film Transistor
	TH	Thermostat for Battery
	TI	Test Mode Select
	TL	Torque Limit
	TM	Sub Code
	TMD	Sub Code Data
	TRE	Tracking Error Signal
	TREEL(P)	Take-up Reel (Pulse)
	TRFIX	Tracking Fix
	TRIWAVE	Tracking Wave
	TRP	Tracking Position
	TRP	Trap
	TSR	Head Switching Refference
	TST	Time Scale Transfer
U	U/V SEL	R-Y/B-Y Select Signal
	UNLOAD	Un-Loading
	UNRE	Microprocessor Read Enable
	UNWE	Microprocessor Write Enable
	UV	R-Y/B-Y
	UV SEL	R-Y/B-Y Select Signal
V	V1-V4	V. CCD Drive Pulse
	VB	VH Filter Switching
	VCE	Power Terminal
	VCNTL	Video Control
	VCO	Voltage Control Oscillator
	VCP	Shift Clock Output for Vertical Drive
	VCTLD	Video Control
	VCTRL	Voltage Charge Control
	VD	Vertical Drive Pulse
	VDDX	X Drive Power for Colour LCD
	VDDXY	XY Drive Power for Colour LCD
	VDDY	Y Drive Power for Colour LCD
	VDREC	Video Delayed Rec
	Vgg	Voltage for Gate IC
	Vgl	Gate off Voltage
	VID	Video Signal Out
	VIN	Video In
	VITC	Vertical Interval Time Code
	VITERBI	One of Signal Detection Method
	VL	Low Voltage
	VLC	Variable Length Cording
	VLOCKP	Artificial Sync Pulse
	VLP	Artificial Sync Pulse
	VM	Motor Voltage
	VMD	Velocity Mode Data
	VMD1-3	Electric Shutter Mode

INITIAL/LOGO		ABBREVIATIONS	INITIAL/LOGO		ABBREVIATIONS
	VMODE	NTSC/PAL Select Switch			
	VMVH	VH Filter Switching			
	VORP	Video Overlap			
	VRB	Voltage Refference Bottom			
	VRBS	Voltage Refference Bottom Output			
	VREF1R3V	Refference Voltage 1.3V			
	VREF3R3V	Refference Voltage 3.3V			
	VREFH	Refference Voltage High Side			
	VREFL	Refference Voltage Low Side			
	VRI	Refference Voltage Input			
	VRO	Refference Voltage Output			
	VRT	Voltage Refference Top			
	VRTS	Voltage Refference Top Output			
	VS	Switching Comparator			
	VSS	Vertical Sync Signal			
	VSSX	X Driver Power for Colour LCD			
	VSSXY	X-Y Driver Power for Colour LCD			
W	W/N	Mode Select for Window Mode			
	W/N	Wide / Normal			
	WAD	Write Address Enable			
	WAE	Write Address Enable			
	WAERAE	Write Address Enable			
	WARI	Interrupt			
	WB	White Balance			
	WE	Write Enable			
	WEM	Memory Write Enable			
	WHD	Wide Horizontal Drive Pulse			
	WIDE A	Wide Zoom			
	WSB	B AGC Control			
	WSR	R AGC Control			
	WTV	Wide TV			
X	XP	FG Logic Reset			
Y	Y FM0-7	Y Field Memory 0-7			
	YCE	Cylinder Error Code			
	YGC	Y Gain Control			
	YMO 0-7	Y Field Memory 0-7			
	YNCST	Noize Canceller			
	YNR	Luminance Noise Reduction			
	YSDP 0-7	Digital Y Out 0-7			
Z	Z.ENC	Zoom Encoder			
	Z.MIC	Zoom Mic			
	ZENC	Zoom Encoder Output			
	ZMDIR	Zoom Drive			
	ZMEN	Zoom Enable			
	ZMT	Zoom Motor Tele Side			
	ZMT (+)/(–)	Zoom Motor (+)/(–)			
	ZMTER	Zoom Motor Tele Side			
	ZMW	Zoom Motor Wide Side			
	ZSW	Zoom Switch			

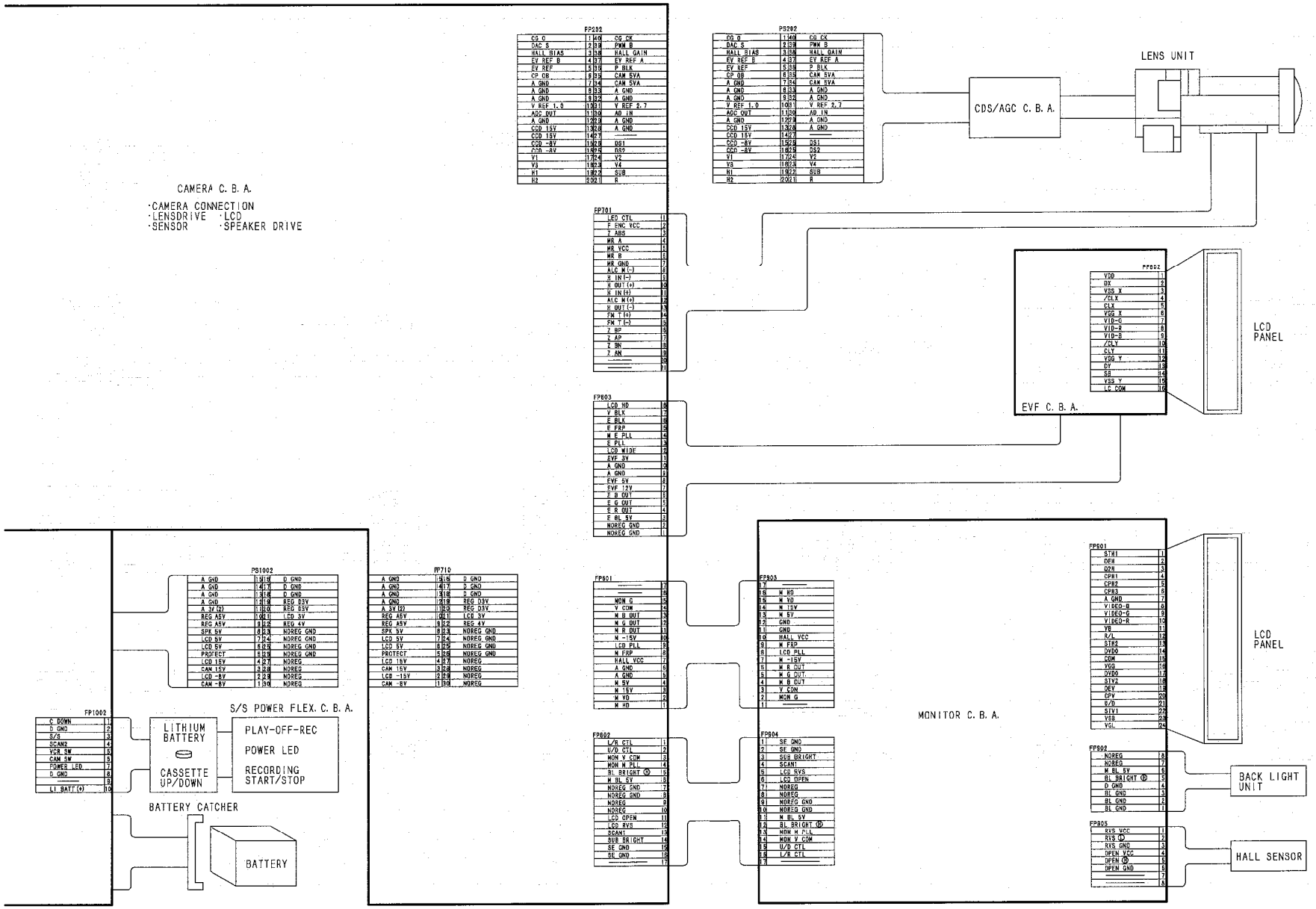
3-2. OVERALL BLOCK DIAGRAM



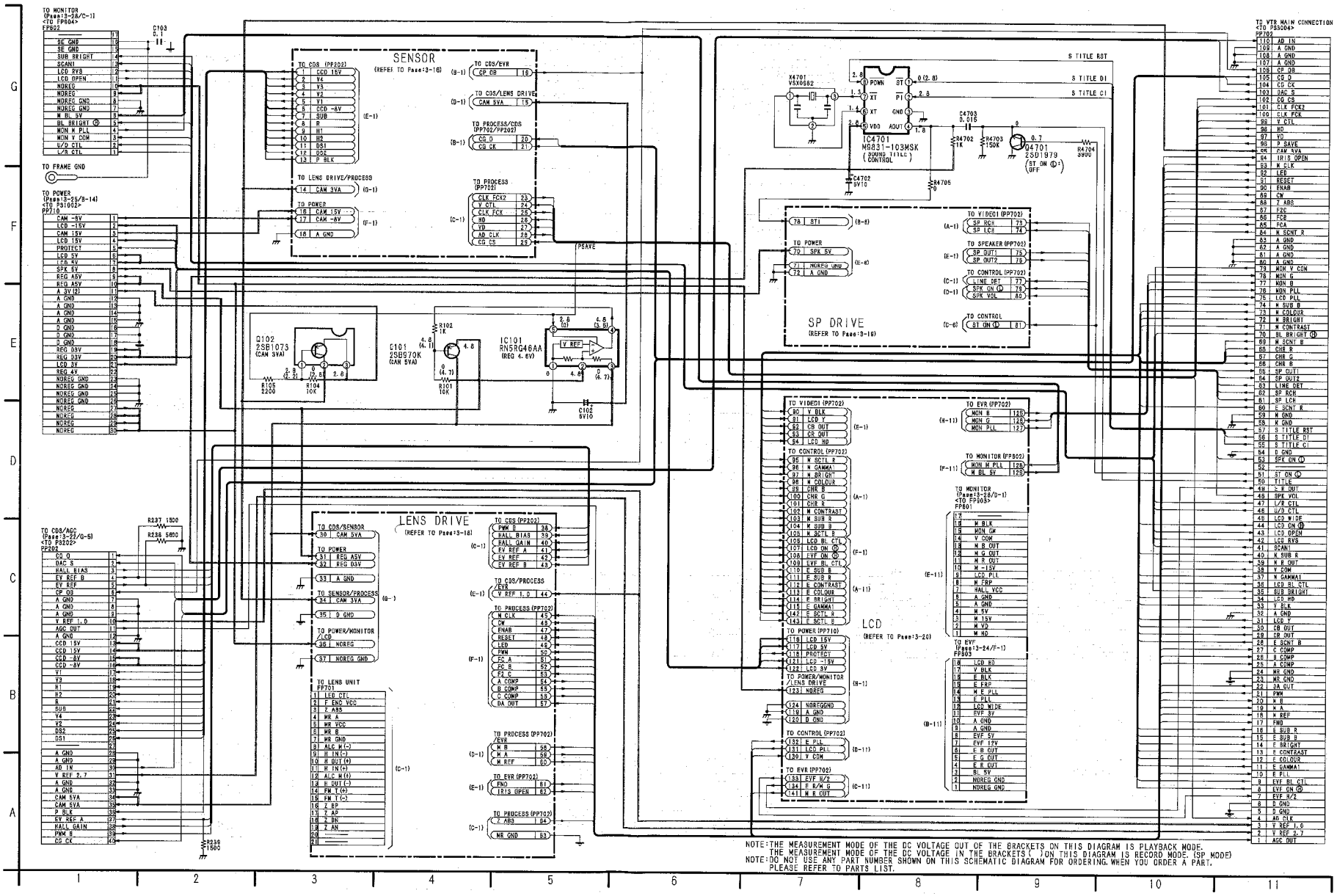
3-3. INTERCONNECTION SCHEMATIC DIAGRAM



Back Page:
OVERALL Section

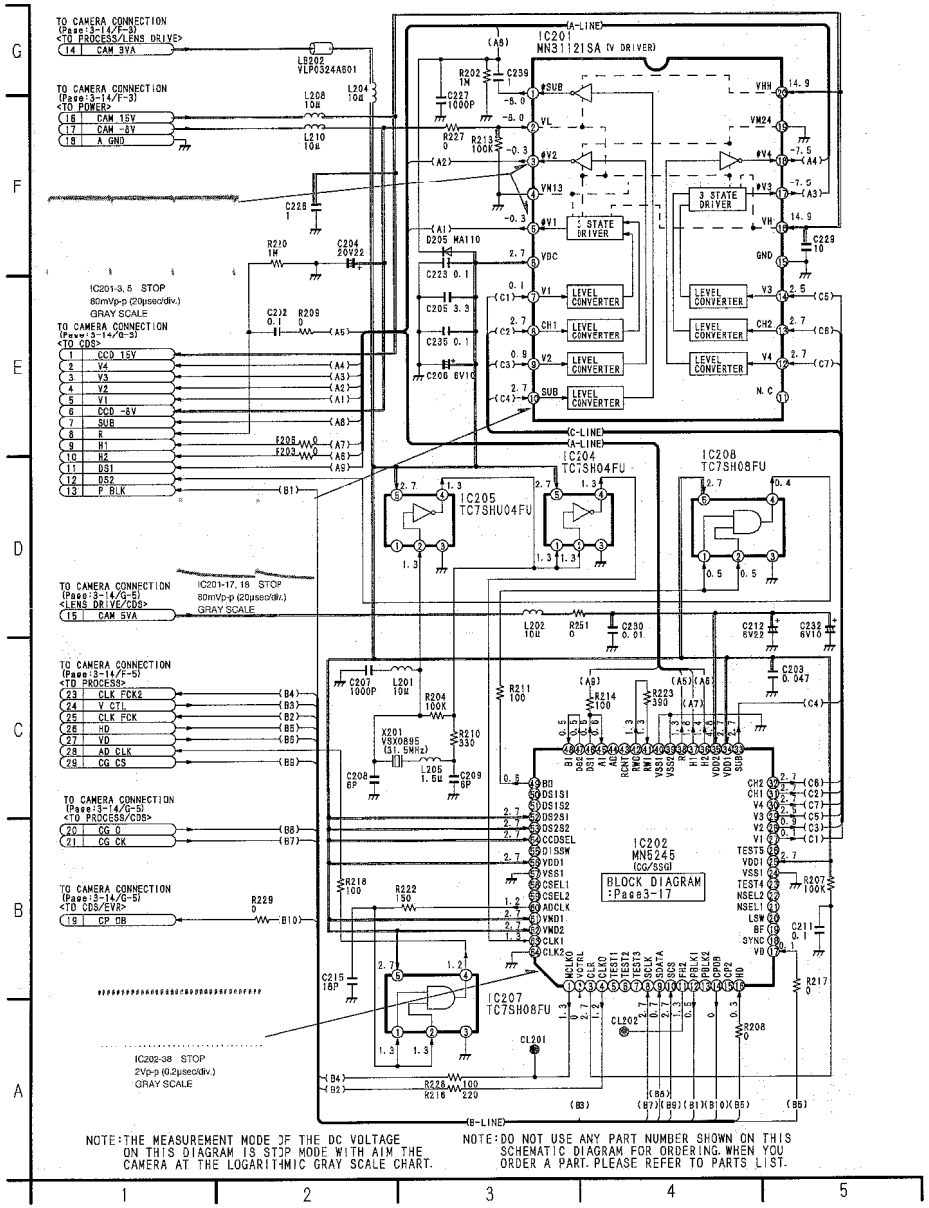

CAMERA C. B. A.
·CAMERA CONNECTION
·LENSDRIVE ·LCD
·SENSOR ·SPEAKER DRIVE
LENS UNIT
CDS/AGC C. B. A.
LCD PANEL
EVF C. B. A.
MONITOR C. B. A.
LCD PANEL
BACK LIGHT UNIT
HALL SENSOR
S/S POWER FLEX. C. B. A.
LITHIUM BATTERY
CASSETTE UP/DOWN
PLAY-OFF-REC
POWER LED
RECORDING START/STOP
BATTERY CATCHER
BATTERY

3-4. CAMERA CONNECTION SCHEMATIC DIAGRAM



Back Page:
INTERCONNECTION Section

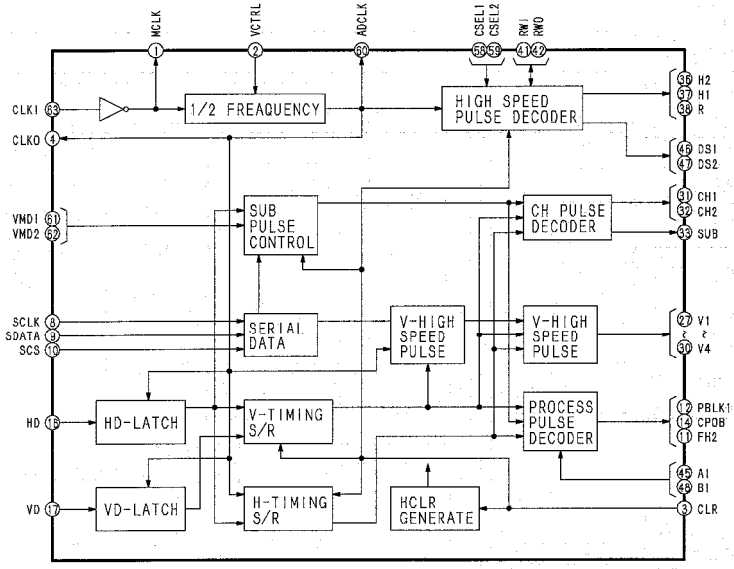
3-5. SENSOR SCHEMATIC DIAGRAM



SENSOR IC BLOCK

IC202:MN5245

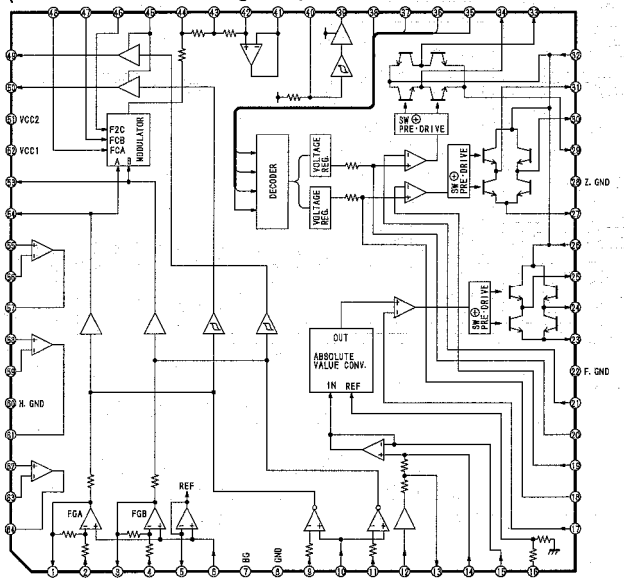
(SCHEMATIC DIAGRAM:Page 3-16)



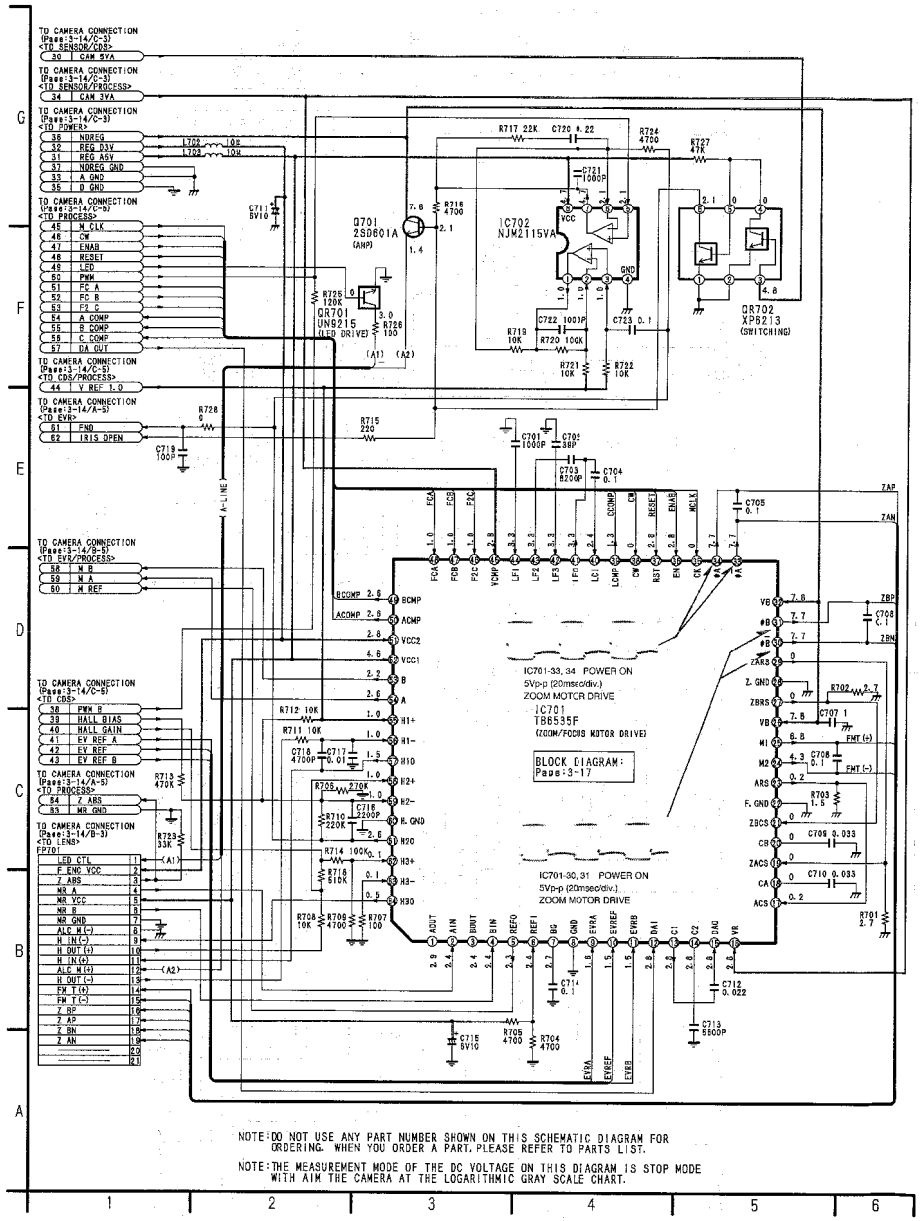
LENS DRIVE IC BLOCK

IC701:TB6535F

(SCHEMATIC DIAGRAM:Page 3-18)

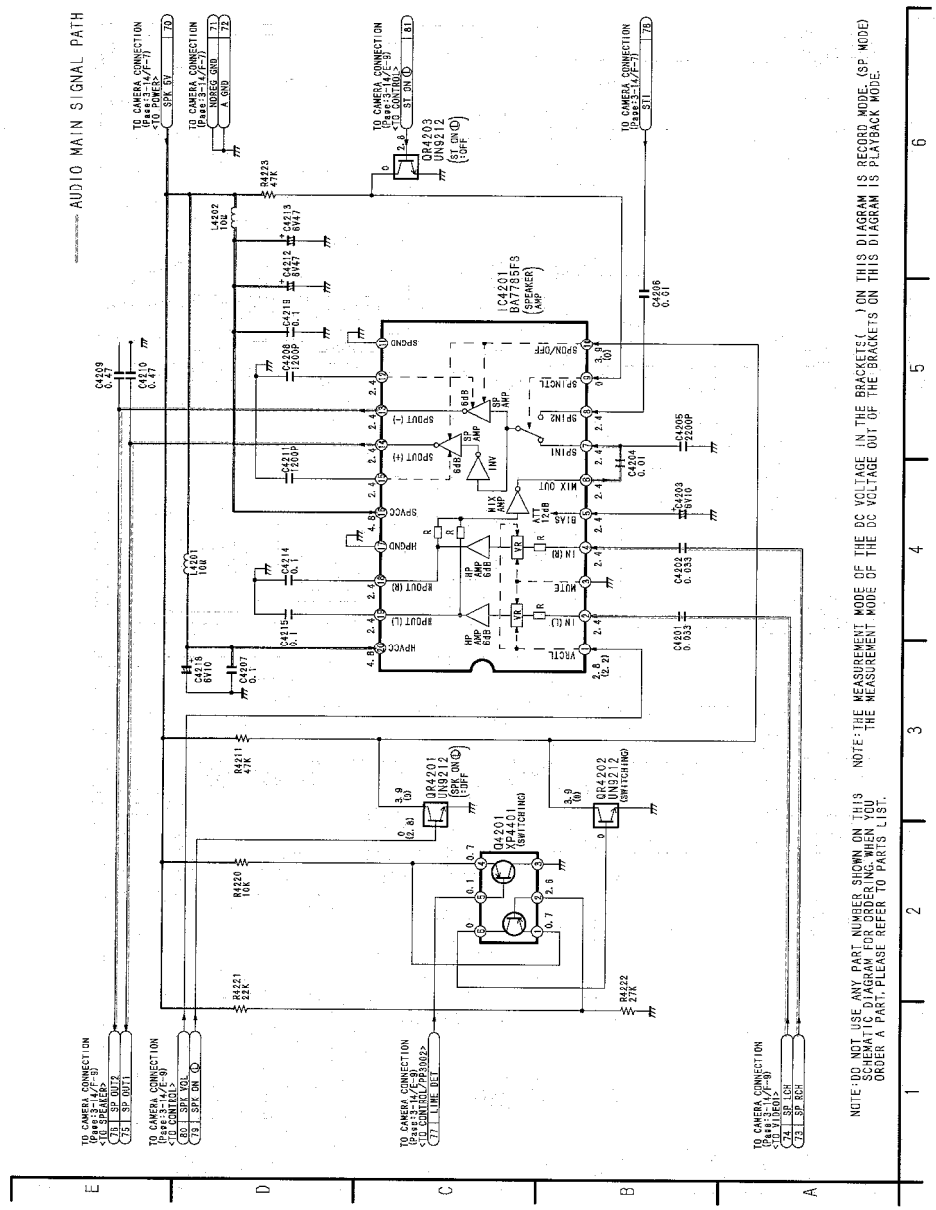


3-6. LENS DRIVE SCHEMATIC DIAGRAM

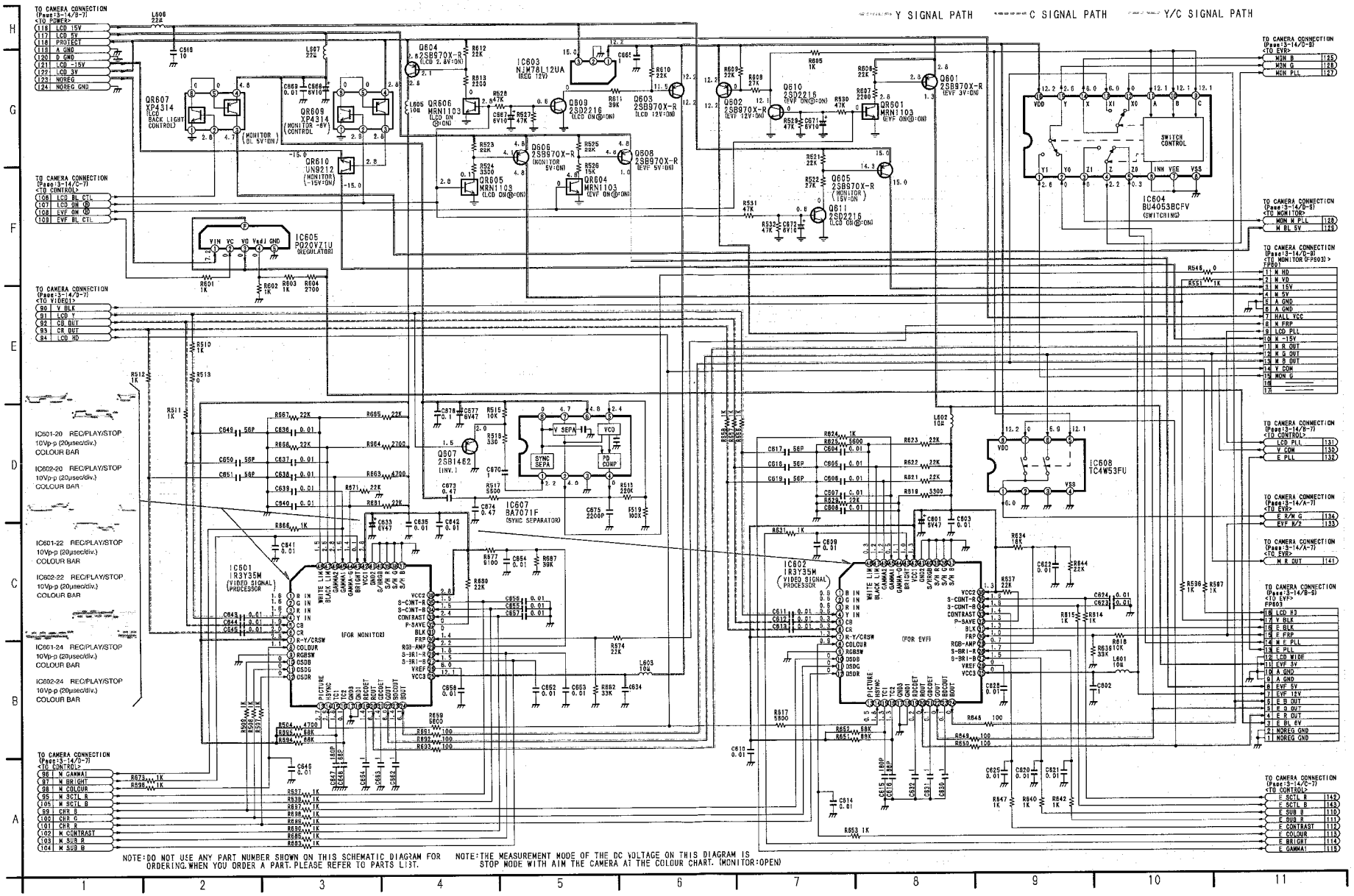

IC702 NJM2115VA
Q701 2SD601A (AMP)
QR701 UN9215 (LED DRIVE)
QR702 XP6213 (SWITCHING)
IC701 TB6535F (ZOOM/FOCUS MOTOR DRIVE)
IC701-33, 34 POWER ON 5Vp-p (20msec/div.) ZOOM MOTOR DRIVE
IC701-30, 31 POWER ON 5Vp-p (20msec/div.) ZOOM MOTOR DRIVE
BLOCK DIAGRAM: Page:3-17
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

Back Page: SENSOR Section

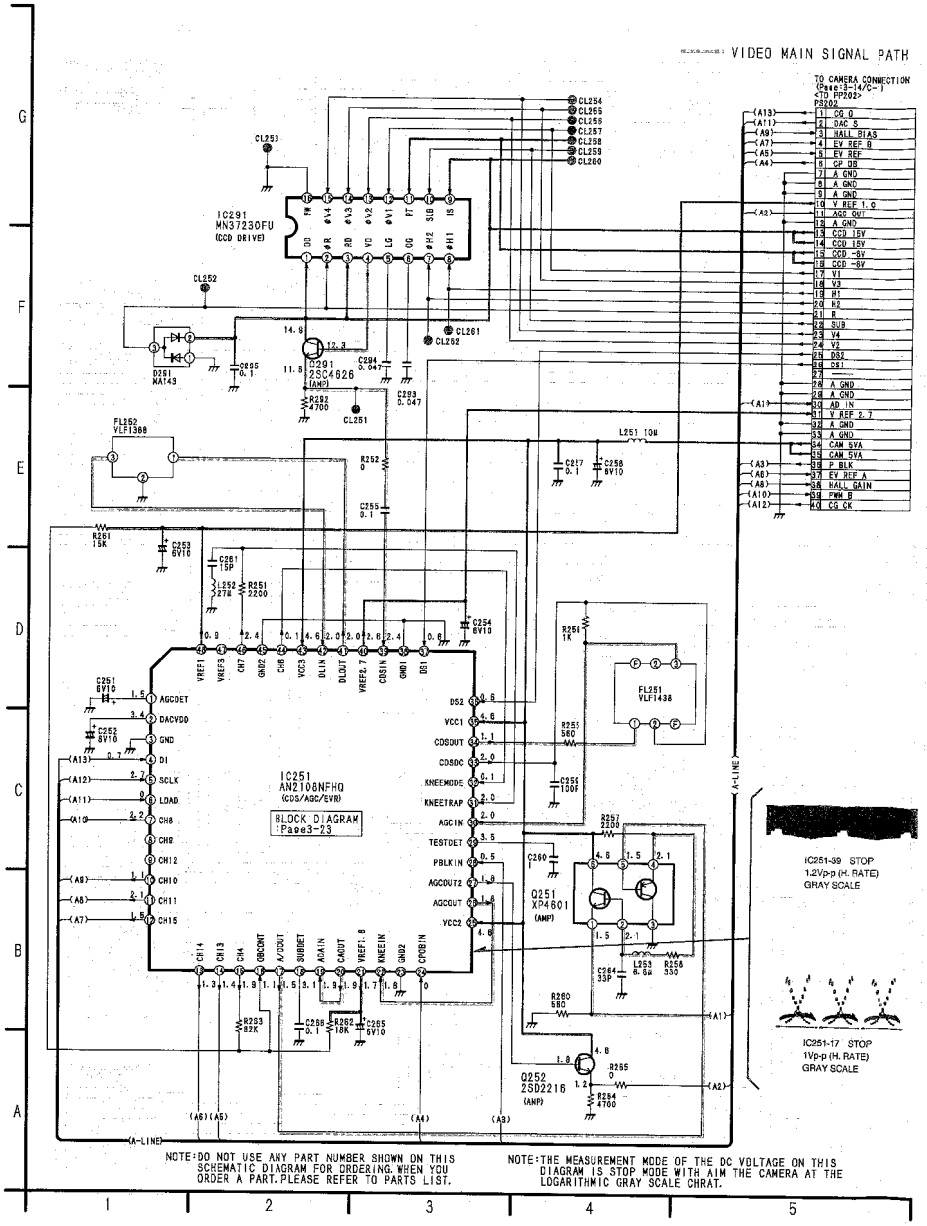
3-7. SP DRIVE SCHEMATIC DIAGRAM


AUDIO MAIN SIGNAL PATH
IC4201 BA7785FS (SPEAKER AMP)
Q4201 XP4401 (SWITCHING)
QR4201 UN9212 (SPK ON/OFF)
QR4202 UN9212 (SWITCHING)
QR4203 UN9212 (ST ON/OFF)
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS( ) ON THIS DIAGRAM IS RECORD MODE. (SP MODE)
THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.

3-8. LCD SCHEMATIC DIAGRAM


Y SIGNAL PATH
C SIGNAL PATH
Y/C SIGNAL PATH
IC601 R3Y35M (VIDEO SIGNAL PROCESSOR)
IC602 R3Y35M (VIDEO SIGNAL PROCESSOR)
IC603 NJM78L12UA (REG 12V)
IC604 BU4053BCFV (SWITCHING)
IC605 PQ20VZ1U (REGULATOR)
IC607 BA7071F (SYNC SEPARATOR)
IC608 TC4W53FU
Q607 XP4314 (LCD BACK LIGHT CONTROL)
Q609 XP4314 (MONITOR -6V CONTROL)
Q610 XP4314 (MONITOR -15V CONTROL)
Q604 2SB970X-R (LCD 2.8V-ON)
Q606 MRN1103 (LCD ON-ON)
Q609 2SD2216 (LCD ON-ON)
Q603 2SB970X-R (LCD 12V-ON)
Q610 2SD2216 (EVF ON-ON)
Q602 2SB970X-R (EVF 12V-ON)
Q601 2SB970X-R (EVF 3V-ON)
QR601 MRN1103 (EVF ON-ON)
Q606 2SB970X-R (MONITOR 5V-ON)
Q608 2SB970X-R (EVF 5V-ON)
QR605 MRN1103 (LCD ON-ON)
QR604 MRN1103 (EVF ON-ON)
Q605 2SB970X-R (MONITOR (15V-ON))
Q611 2SD2216 (LCD ON-ON)
Q607 2SB1462 (INV.)
TO CAMERA CONNECTION (Page:3-14/B-7) <TO POWER>
TO CAMERA CONNECTION (Page:3-14/C-7) <TO CONTROL>
TO CAMERA CONNECTION (Page:3-14/D-7) <TO VIDEO1>
TO CAMERA CONNECTION (Page:3-14/B-8) <TO EVR>
TO CAMERA CONNECTION (Page:3-14/D-8) <TO MONITOR>
TO CAMERA CONNECTION (Page:3-14/B-8) <TO MONITOR (F-PS03)>
TO CAMERA CONNECTION (Page:3-14/B-7) <TO CONTROL>
TO CAMERA CONNECTION (Page:3-14/A-7) <TO EVR>
TO CAMERA CONNECTION (Page:3-14/B-8) <TO EVF>
TO CAMERA CONNECTION (Page:3-14/C-7) <TO CONTROL>
IC601-20 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
IC602-20 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
IC601-22 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
IC602-22 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
IC601-24 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
IC602-24 REC/PLAY/STOP 10Vp-p (20μsec/div.) COLOUR BAR
(FOR MONITOR)
(FOR EVF)
SWITCH CONTROL
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING.WHEN YOU ORDER A PART.PLEASE REFER TO PARTS LIST.
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE COLOUR CHART. (MONITOR:OPEN)

3-9. CDS/AGC SCHEMATIC DIATRAM

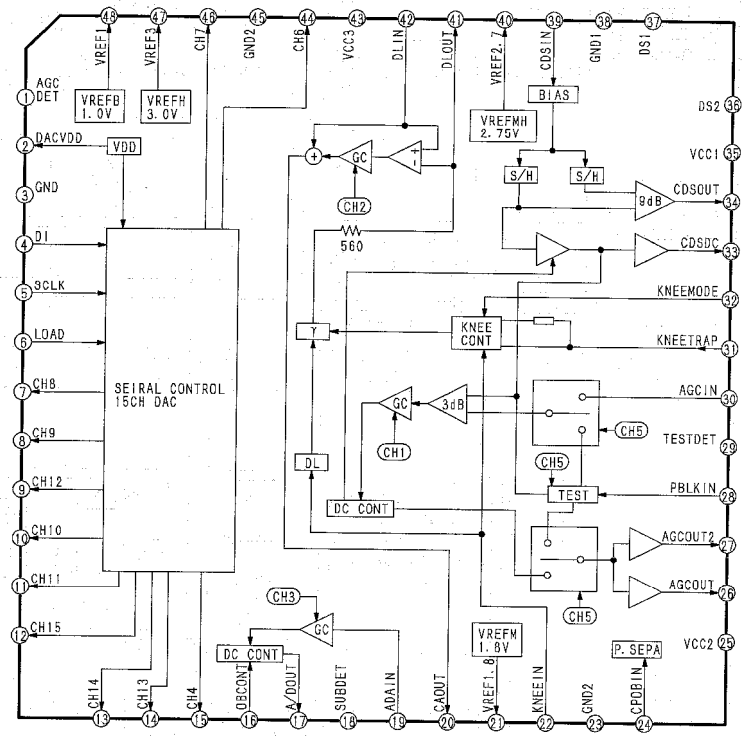


Back Page:
LCD Section

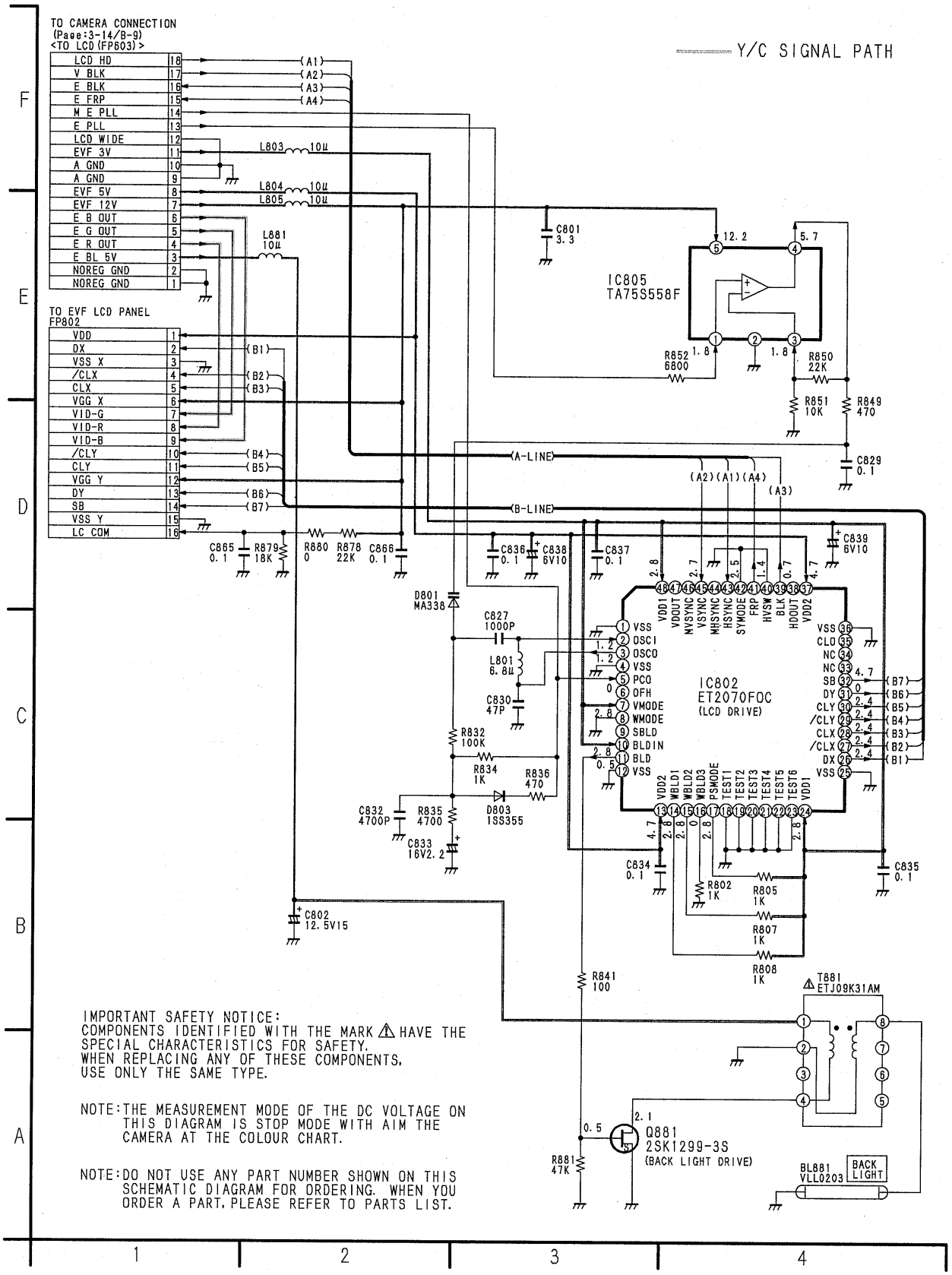
CDS/AGC IC BLOCK

IC251:AN2108NFHQ

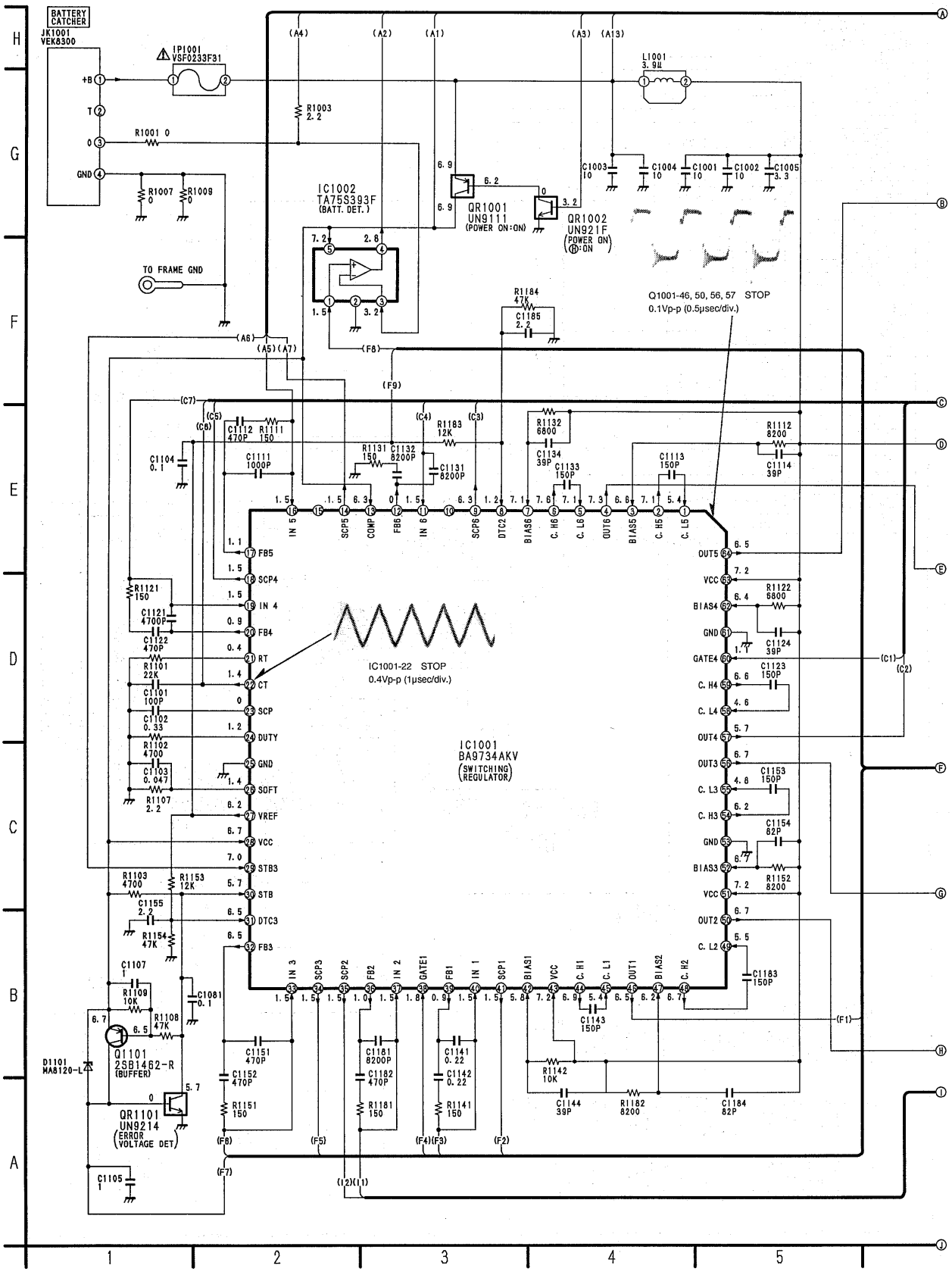
(SCHEMATIC DIAGRAM:Page 3-22)

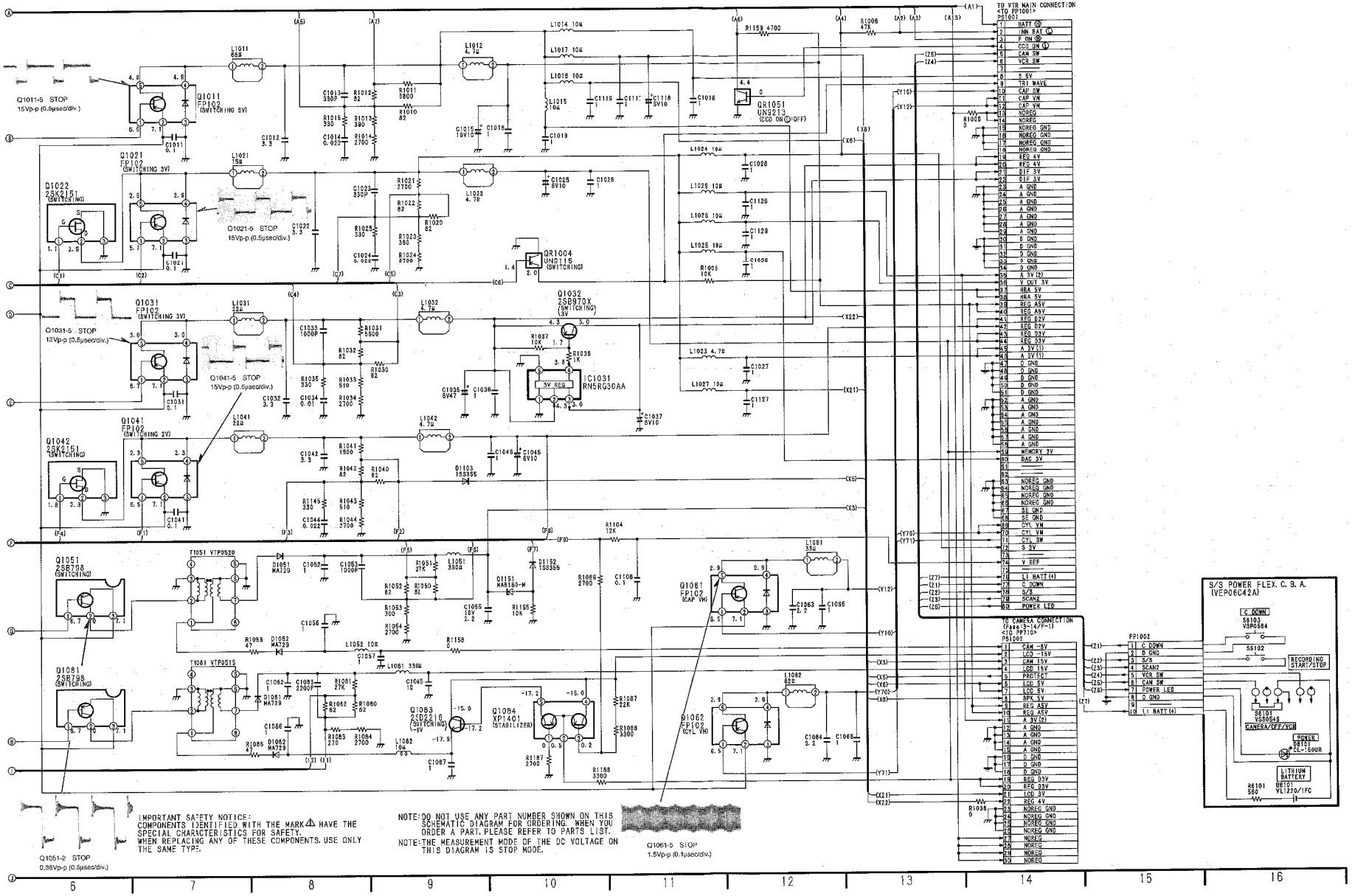


3-10. E.V.F. SCHEMATIC DIAGRAM

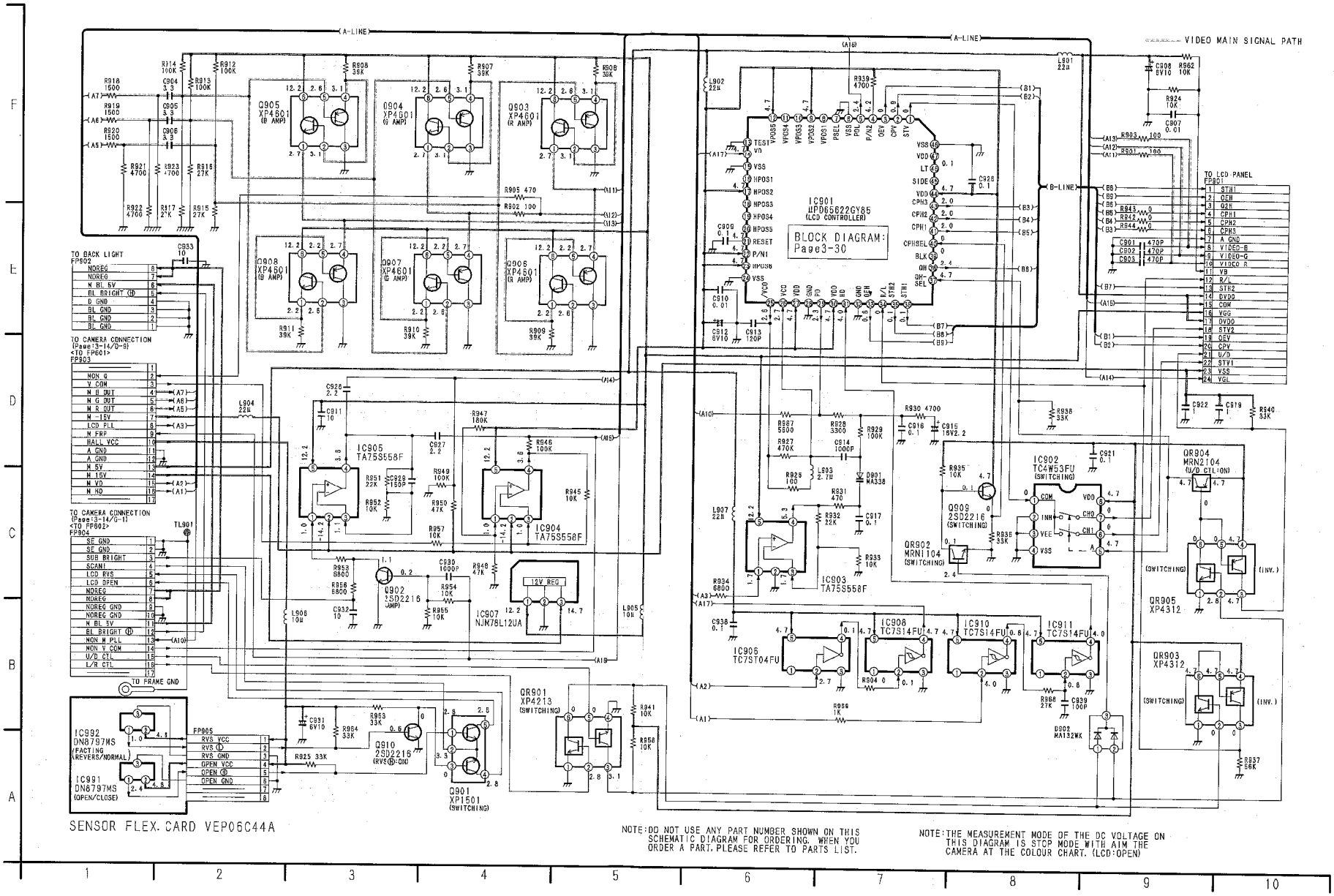


3-11. POWER & S/S POWER FLEX. CARD SCHEMATIC DIAGRAM




TO VTR MAIN CONNECTION
<TO PP1001>
P81001
BATT (+)
INN BAT (+)
P ON (-)
CCD ON (+)
CAN SW
VCR SW
5.6V
TRI WAVE
CAP SW
CAP VN
CAP VP
NOREG
NOREG GND
REG 4V
DIF 3V
A GND
A 3V (2)
V OUT 3V
HRA 5V
REG A5V
REG B2V
REG D3V
A 3V (1)
D GND
MEMORY 3V
BAC 3V
SE GND
CYL VM
CYL SW
S 5V
V REF
LI BATT (+)
C DOWN
S/S
SCAN2
POWER LED
TO CAMERA CONNECTION
(Page 9-14/P-1)
<TO PP710>
P81002
CAM -8V
LCD -15V
CAM 15V
LCD 15V
PROTECT
LCD 5V
SPK 5V
REG A5V
A 3V (2)
REG D3V
LCD 3V
REG 4V
FP1002
S/S POWER FLEX. C. B. A.
(VEP06C42A)
SS103
VSP0584
SS102
RECORDING START/STOP
S6101
VSS0548
CAMERA/OFF/VCR
POWER
D6101
CL-160UR
LITHIUM BATTERY
BT101
VL1220/1FC
R6101
560
Q1011-5 STOP
15Vp-p (0.5μsec/div.)
Q1021-5 STOP
15Vp-p (0.5μsec/div.)
Q1031-5 STOP
12Vp-p (0.5μsec/div.)
Q1041-5 STOP
15Vp-p (0.5μsec/div.)
Q1051-2 STOP
0.86Vp-p (0.5μsec/div.)
Q1061-5 STOP
1.5Vp-p (0.1μsec/div.)
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.
NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

3-12. MONITOR & SENSOR FLEX. CARD SCHEMATIC DIAGRAM

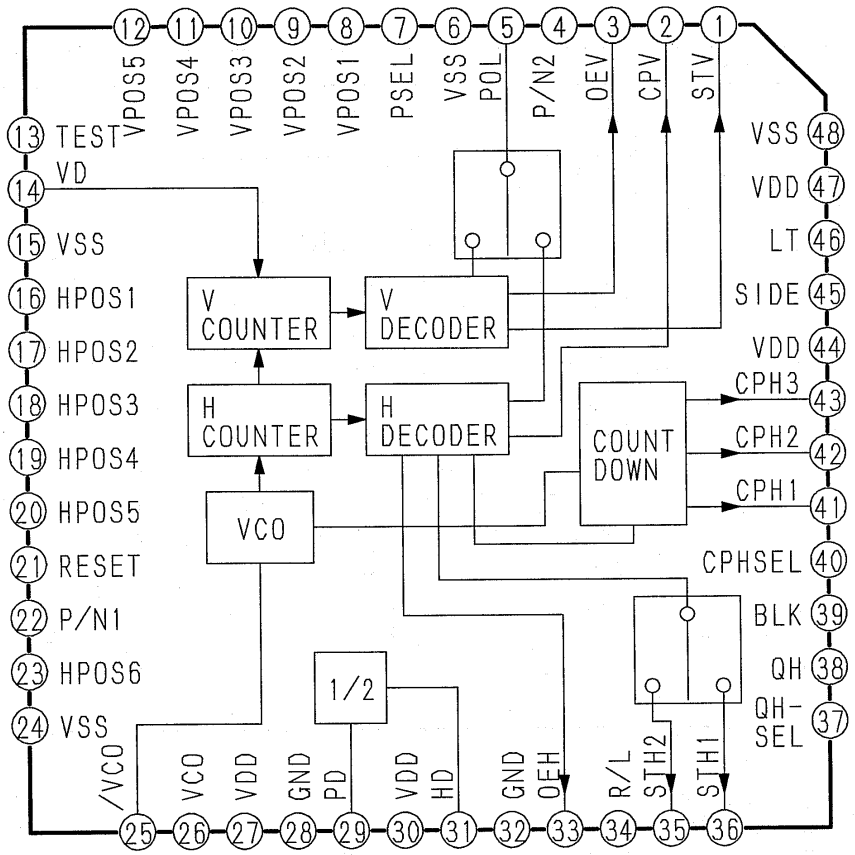

VIDEO MAIN SIGNAL PATH
IC901 μPD65622GY85 (LCD CONTROLLER)
BLOCK DIAGRAM: Page3-30
IC902 TC4W53FU (SWITCHING)
IC903 TA75S558F
IC904 TA75S558F
IC905 TA75S558F
IC906 TC7ST04FU
IC907 NJM78L12UA
IC908 TC7S14FU
IC909 TC7S14FU
IC910 TC7S14FU
IC911 TC7S14FU
IC991 DN8797MS (OPEN/CLOSE)
IC992 DN8797MS (FACTING (REVERS/NORMAL)
Q901 XP1501 (SWITCHING)
Q902 2SD2216 (AMP)
Q903 XP4601 (R AMP)
Q904 XP4601 (G AMP)
Q905 XP4601 (B AMP)
Q906 XP4601 (R AMP)
Q907 XP4601 (G AMP)
Q908 XP4601 (B AMP)
Q909 2SD2216 (SWITCHING)
Q910 2SD2216 (RVS ON-OFF)
QR901 XP4213 (SWITCHING)
QR902 MRN1104 (SWITCHING)
QR903 XP4312 (SWITCHING) (INV.)
QR904 MRN2104 (U/D CTL=ON)
QR905 XP4312 (SWITCHING) (INV.)
D901 MA338
D903 MA132WK
TO BACK LIGHT FP902
TO CAMERA CONNECTION (Page:3-14/G-8) <TO FP601> FP903
TO CAMERA CONNECTION (Page:3-14/G-11 <TO FP602> FP904
TO FRAME GND
FP905
TO LCD PANEL FP901
SENSOR FLEX. CARD VEP06C44A
NOTE:DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE:THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE COLOUR CHART. (LCD:OPEN)

Back Page: POWER Section

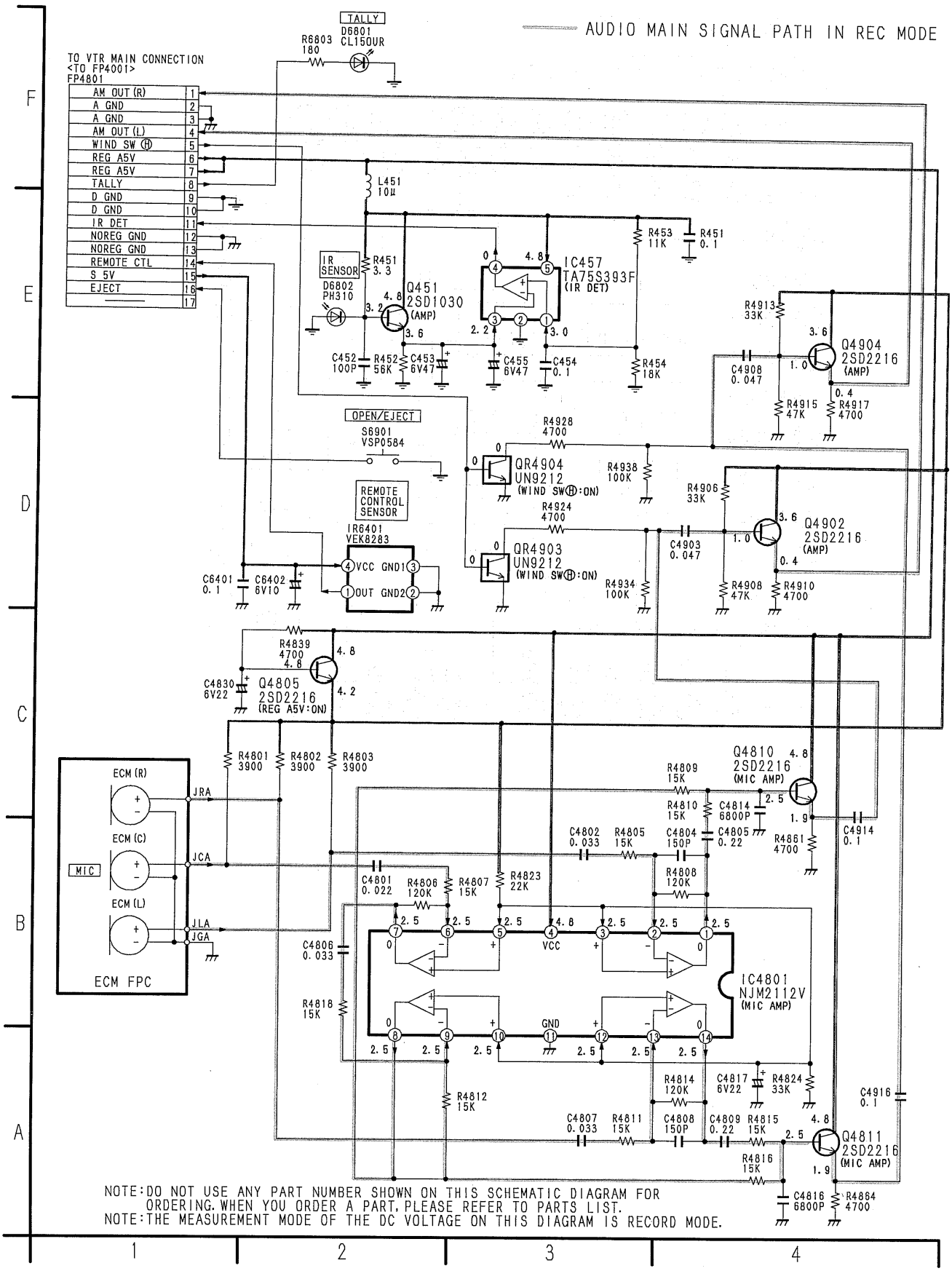
MONITOR IC BLOCK

IC901:uPD65622GY85

(SCHEMATIC DIAGRAM:Page 3-29)

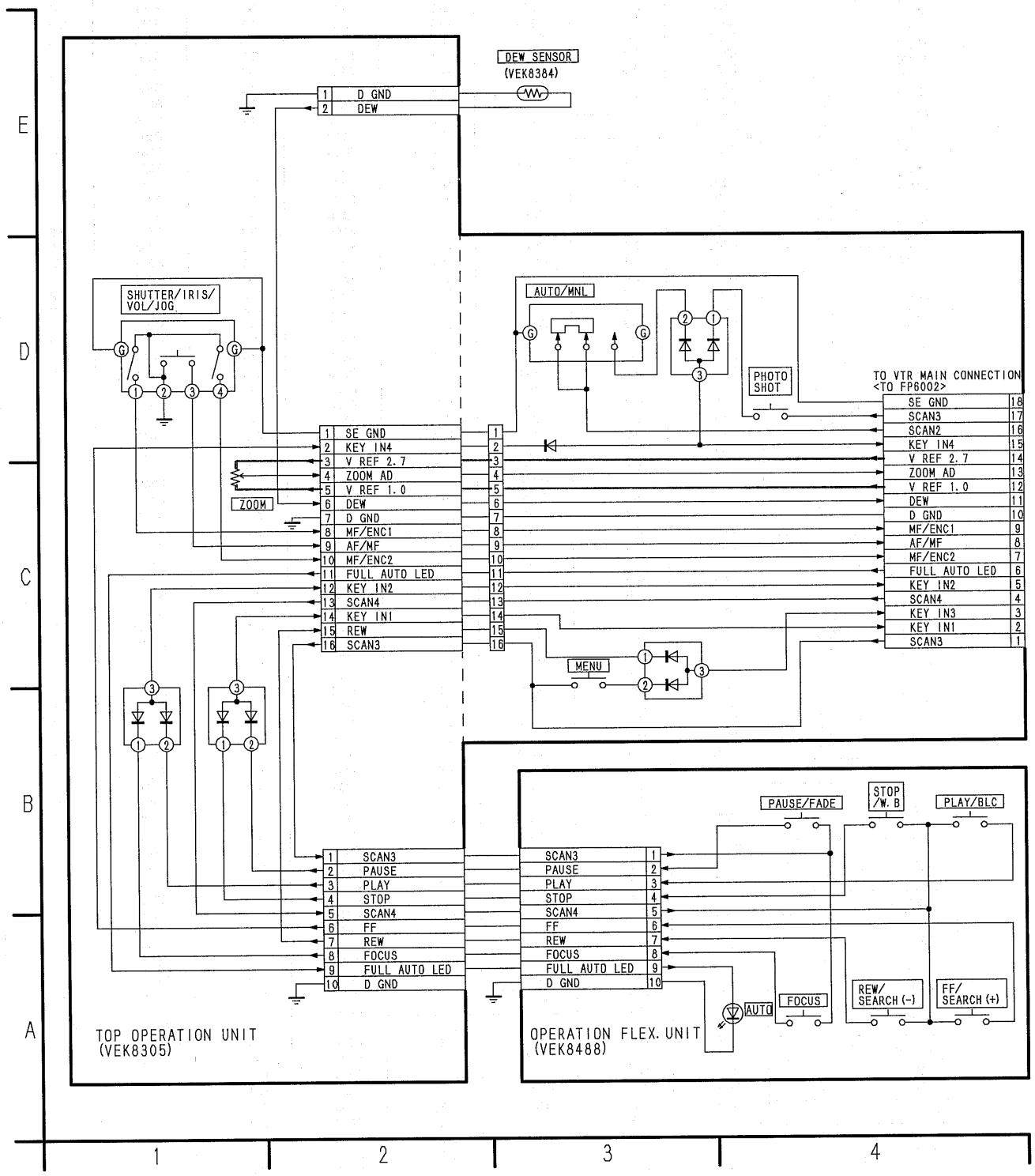


3-13. MIC UNIT SCHEMATIC DIAGRAM



NOTE: DO NOT USE ANY PART NUMBER SHOWN ON THIS SCHEMATIC DIAGRAM FOR ORDERING. WHEN YOU ORDER A PART, PLEASE REFER TO PARTS LIST.
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS RECORD MODE.

3-14. OPERATION FLEX. UNIT & TOP OPERATION UNIT



CAMERA C.B.A.

Integrated Circuit

IC101	E-6
IC201	B-7
IC202	C-7
IC204	D-6
IC205	D-6
IC207	D-6
IC208	D-7
IC601	D-6
IC602	B-6
IC603	C-4
IC604	C-5
IC605	B-7
IC607	E-5
IC608	C-5
IC701	E-7
IC702	D-7
IC4201	E-6
IC4701	D-6

Transistor

Q101	D-6
Q102	E-6
Q601	B-6
Q602	A-6
Q603	D-4
Q604	C-5
Q605	C-4
Q606	D-5
Q607	D-4
Q608	A-7
Q609	D-4
Q610	A-5
Q611	C-5
Q701	D-7
Q4201	E-6
Q4701	D-5

Transistor & Resistor

QR601	A-6
QR604	A-7
QR605	D-5
QR606	C-5
QR607	D-5
QR609	A-6
QR610	A-6
QR701	D-7
QR702	C-7
QR4201	E-6
QR4202	E-6
QR4203	E-6

Test Point

CL201	C-2
CL202	C-2
CL601	A-2

Diode

D205	C-7

Connector

FP601	C-5
FP602	D-5
FP603	B-7
FP701	D-7
PP202	C-7
PP702	C-4
PP710	A-6

Crystal Oscillator

X201	D-6
X4701	E-5

Coil

L201	D-6
L202	C-7
L204	C-6
L205	D-7
L208	C-7
L210	B-7
L601	B-6
L602	A-6
L603	C-6
L605	D-6
L606	B-6
L607	D-5
L702	D-7
L703	E-7
L4201	E-5
L4202	E-5
LB202	C-6

Capacitor

C102	E-7
C103	A-2
C202	C-7
C203	C-7
C204	B-7
C205	C-6
C206	B-7
C207	D-6
C208	D-6
C209	D-6
C211	D-7
C212	D-6
C215	D-6
C223	B-7
C226	B-7
C227	C-7
C229	B-7
C230	C-7
C232	D-7
C235	C-6
C239	B-7
C601	B-6
C602	A-6
C603	A-6
C604	C-3
C605	C-3
C606	C-3
C607	B-6
C608	B-6
C609	C-6
C610	A-6
C611	C-6
C612	C-6
C613	C-6
C614	B-6
C615	B-6
C616	B-6
C617	C-3
C618	C-3
C619	C-3
C620	B-6
C621	B-7
C622	B-7
C623	B-7
C624	B-7
C625	B-7
C626	B-7
C630	B-6
C631	B-6
C632	B-7
C633	D-6
C634	C-6
C635	D-5
C636	D-6
C637	D-6
C638	D-6
C639	D-6
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C641	D-6
C642	D-6
C643	D-5
C644	C-5
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C646	D-5
C647	C-5
C648	C-5
C649	D-5
C650	C-5
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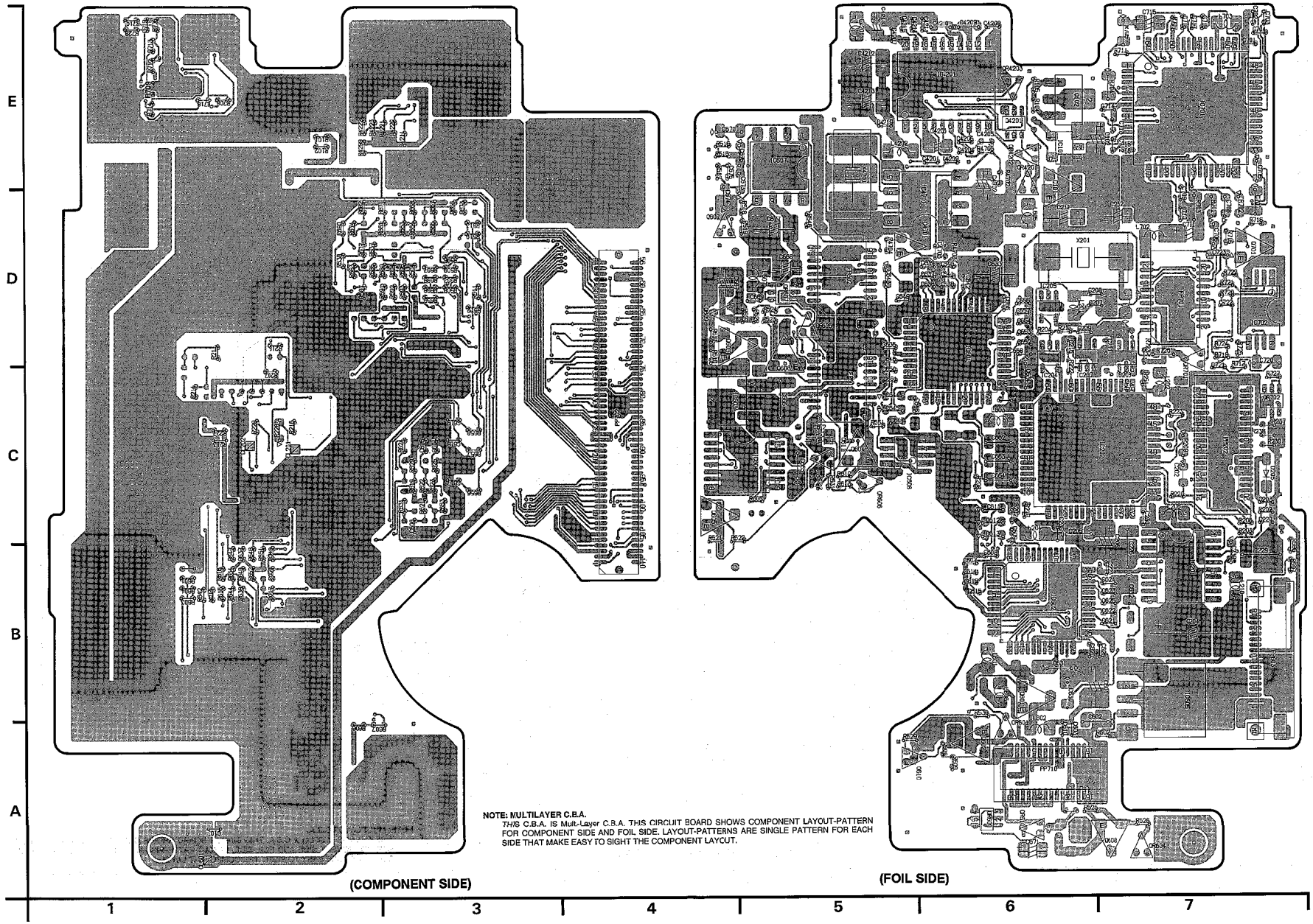
C658	D-6
C662	C-6
C663	C-6
C664	C-6
C665	C-5
C666	C-5
C667	D-4
C668	D-5
C669	D-5
C670	E-4
C671	A-6
C672	C-5
C673	E-5
C674	D-4
C675	E-4
C676	E-5
C677	D-5
C701	E-7
C702	E-7
C703	E-7
C704	E-7
C705	E-7
C706	D-7
C707	D-7
C708	D-7
C709	D-7
C710	D-7
C711	D-7
C712	E-7
C713	E-7
C714	E-7
C715	E-7
C716	E-7
C717	E-7
C718	E-7
C719	E-1
C720	D-7
C721	C-7
C722	D-7
C723	D-7
C4201	E-6
C4202	E-6
C4203	E-6
C4204	E-6
C4205	E-6
C4206	E-6
C4207	E-5
C4208	E-6
C4209	E-6
C4210	E-6
C4211	E-6
C4212	E-5
C4213	E-5
C4214	E-5
C4215	E-5
C4218	E-5
C4219	E-5
C4702	E-6
C4703	D-6

Resistor

R101	E-2
R102	E-2
R104	E-6
R105	E-6
R202	C-7
R203	C-7
R204	D-6
R206	C-7
R207	C-2
R208	C-6
R209	C-7
R210	D-6
R211	D-2
R213	C-2
R214	C-1
R216	C-2
R217	C-6
R218	D-2
R220	C-7
R222	C-6
R223	C-7
R227	C-2
R228	C-2
R229	C-2
R237	C-7
R238	C-7
R239	C-7
R251	C-7
R504	D-3
R507	D-3
R508	D-3
R509	D-3
R510	D-3
R511	D-3
R512	D-3
R513	D-3
R515	E-5
R516	E-5
R517	E-5
R518	D-5
R519	D-5
R521	C-4
R522	C-4
R523	D-5
R524	D-5
R525	A-6
R526	A-7
R527	D-5
R528	D-5
R529	A-5
R530	B-6
R531	C-5
R532	C-5
R537	D-2
R538	D-2
R546	D-5
R551	C-5
R596	B-7
R597	B-7
R601	B-1
R602	A-7
R603	B-1
R604	B-1
R605	C-5
R606	A-2
R607	A-2
R608	A-6
R609	A-6
R610	D-4
R611	D-4
R612	C-5
R613	C-5
R614	B-2
R615	B-2
R616	B-2
R617	B-2
R619	C-3
R621	C-3
R622	C-3
R623	C-3
R624	C-3
R625	C-3
R629	C-3
R631	C-3
R634	B-2
R637	B-2
R639	B-2
R640	B-2
R642	B-1
R644	B-2
R647	B-2
R648	B-2
R649	B-2
R650	B-2
R651	B-2
R652	B-2
R653	C-3
R656	C-3
R657	C-3
R658	C-3
R659	D-3
R661	D-3
R663	D-3
R664	D-3
R665	D-3
R666	D-3
R667	D-3
R668	D-3
R671	D-3
R673	D-3
R674	D-2
R677	D-2
R680	D-3
R682	D-2
R683	D-2
R685	D-2
R687	D-2
R690	D-2
R691	D-3
R692	D-3
R693	D-3
R694	D-3
R695	D-3
R696	D-3
R697	D-3
R698	D-3
R699	D-3
R701	D-7
R702	D-7
R703	D-7
R704	E-7
R705	E-7
R706	E-1
R707	E-7
R708	E-2
R709	E-1
R710	E-1
R711	E-7
R712	E-1
R713	E-1
R714	E-1
R715	D-7
R716	D-7
R717	C-7
R718	E-1
R719	D-7
R720	D-7
R721	D-7
R722	D-7
R723	D-7
R724	C-7
R725	D-7
R726	D-7
R727	C-7
R728	E-1
R4211	E-3
R4220	E-3
R4221	E-3
R4222	E-2
R4223	E-2
R4299	E-2
R4702	E-6
R4703	D-6
R4704	D-5
R4705	E-6

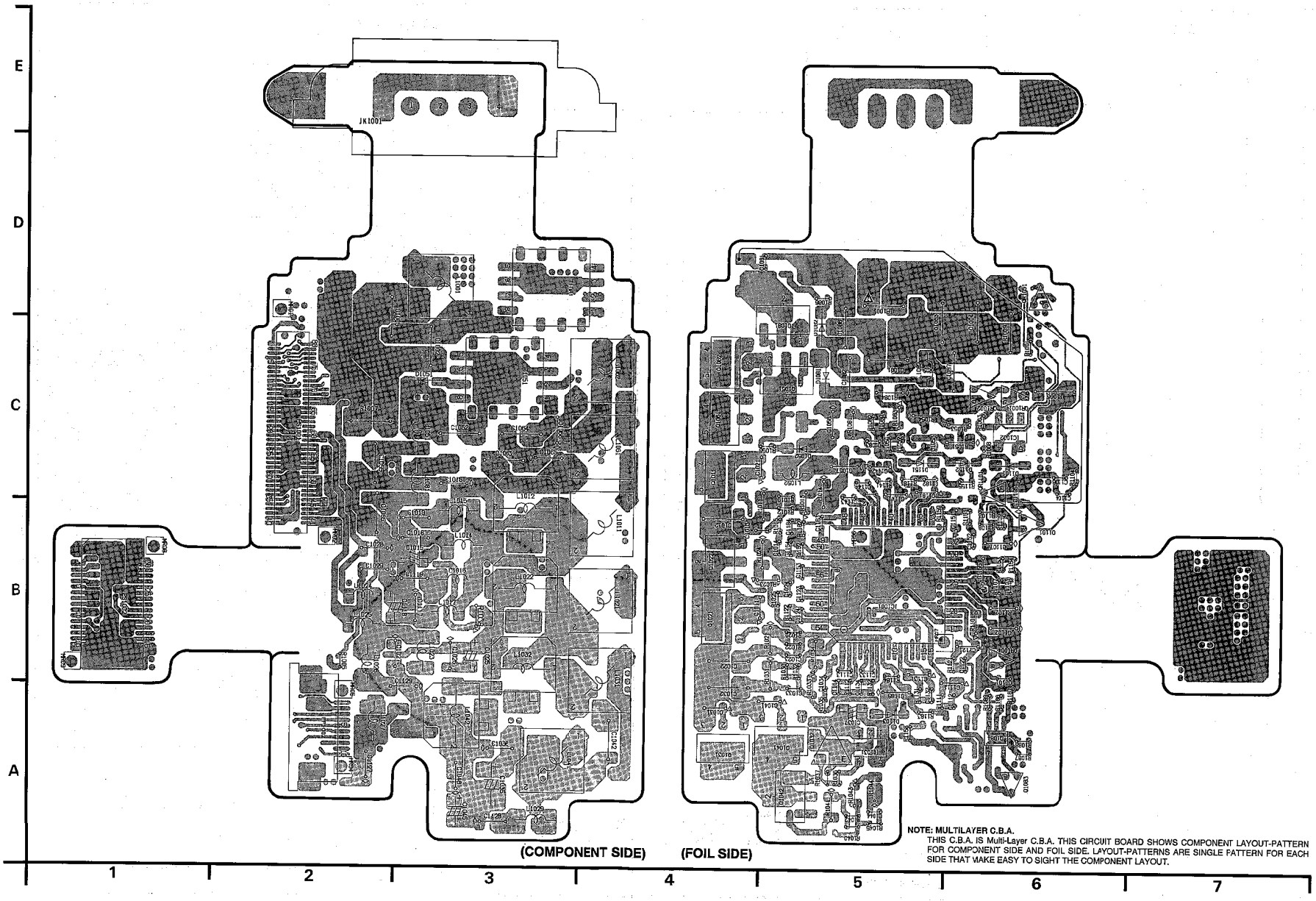
ADDRESS INFORMATION

3-15. CAMERA [Camera Connection, Sensor, Lens Drive, SP Drive, LCD Section] C.B.A. (VEP00Z70A)



NOTE: MULTILAYER C.B.A.
THIS C.B.A. IS Mult-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYCUT.

3-16. POWER C.B.A. (VEP01817D)



NOTE: MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

Back Page:
AMERA C.B.A. Section

POWER C.B.A.

Integrated Circuit	
IC1001	B-5
IC1002	C-6
IC1031	A-5

Transistor	
Q1011	C-4
Q1021	B-4
Q1022	B-4
Q1031	A-4
Q1032	A-5
Q1041	A-5
Q1042	A-5
Q1051	C-5
Q1061	C-4
Q1062	C-4
Q1081	C-5
Q1083	A-6
Q1084	A-6
Q1101	B-6

Transistor & Resistor	
QR1001	C-6
QR1002	C-6
QR1004	B-6
QR1051	D-6
QR1101	C-6

Diode	
D1051	C-3
D1052	C-5
D1081	C-5
D1082	C-5
D1101	C-6
D1103	A-5
D1151	C-5
D1152	C-6

Connector	
JK1001	E-2
FP1002	A-2
PS1001	C-2
PS1002	B-1

IP	
IP1001	D-5

Transformer	
T1051	C-3
T1081	D-3

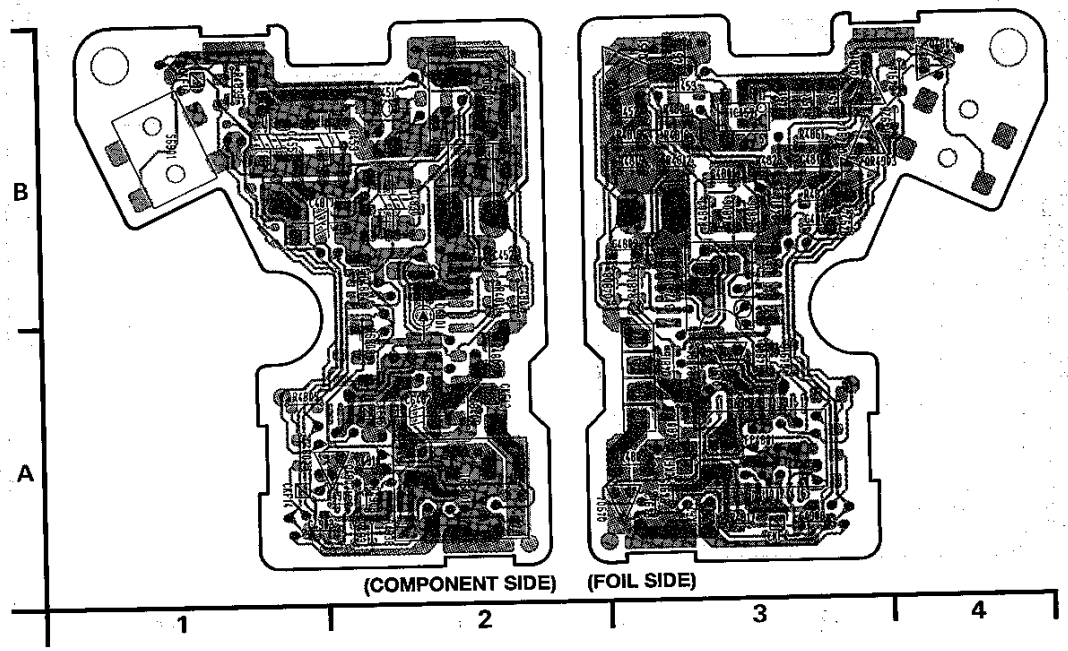
Coil	
L1001	D-3
L1011	B-4
L1012	B-3
L1014	B-3
L1015	B-3
L1016	B-3
L1017	B-3
L1021	B-4
L1022	B-3
L1023	B-3
L1024	B-2
L1025	B-2
L1026	B-2
L1027	A-2
L1029	A-3
L1031	B-4
L1032	B-3
L1041	A-3
L1042	A-3
L1051	C-3
L1052	C-5
L1061	C-4
L1062	C-4
L1081	C-3
L1082	C-5

Capacitor	
C1001	C-5
C1002	C-3
C1003	C-5
C1004	C-6
C1005	D-2
C1011	B-4
C1012	B-4
C1013	B-4
C1014	B-5
C1015	B-3
C1016	C-3
C1018	C-3
C1019	C-3
C1021	C-5
C1022	B-4
C1023	B-5
C1024	B-5
C1025	B-3
C1026	B-3
C1027	B-3
C1028	B-2
C1029	B-2
C1031	A-4
C1032	A-4
C1033	A-5
C1034	B-5
C1035	A-3
C1036	A-3
C1037	A-5
C1041	A-5
C1042	A-4
C1044	A-5
C1045	A-3
C1046	A-3
C1052	C-3
C1053	C-5
C1055	B-2
C1056	C-5
C1057	C-5
C1063	C-3
C1064	C-3
C1065	C-3
C1066	C-3
C1081	D-5
C1082	C-5
C1083	C-5
C1085	B-2
C1086	C-5
C1087	C-6
C1101	B-6
C1102	B-6
C1103	B-6
C1104	C-6
C1105	C-6
C1106	C-6
C1107	B-6
C1111	B-6
C1112	A-6
C1113	B-5
C1114	A-5
C1117	B-3
C1118	B-3
C1119	B-3
C1121	B-6
C1122	B-6
C1123	B-5
C1124	B-5
C1127	A-2
C1128	A-3
C1129	A-3
C1131	B-5
C1132	A-5
C1133	B-5
C1134	A-5
C1141	C-5
C1142	C-5
C1143	C-5
C1144	C-5
C1151	C-6
C1152	B-6
C1153	B-5
C1154	B-5
C1155	B-6
C1181	C-5
C1182	C-5
C1183	B-5
C1184	B-5
C1185	A-5

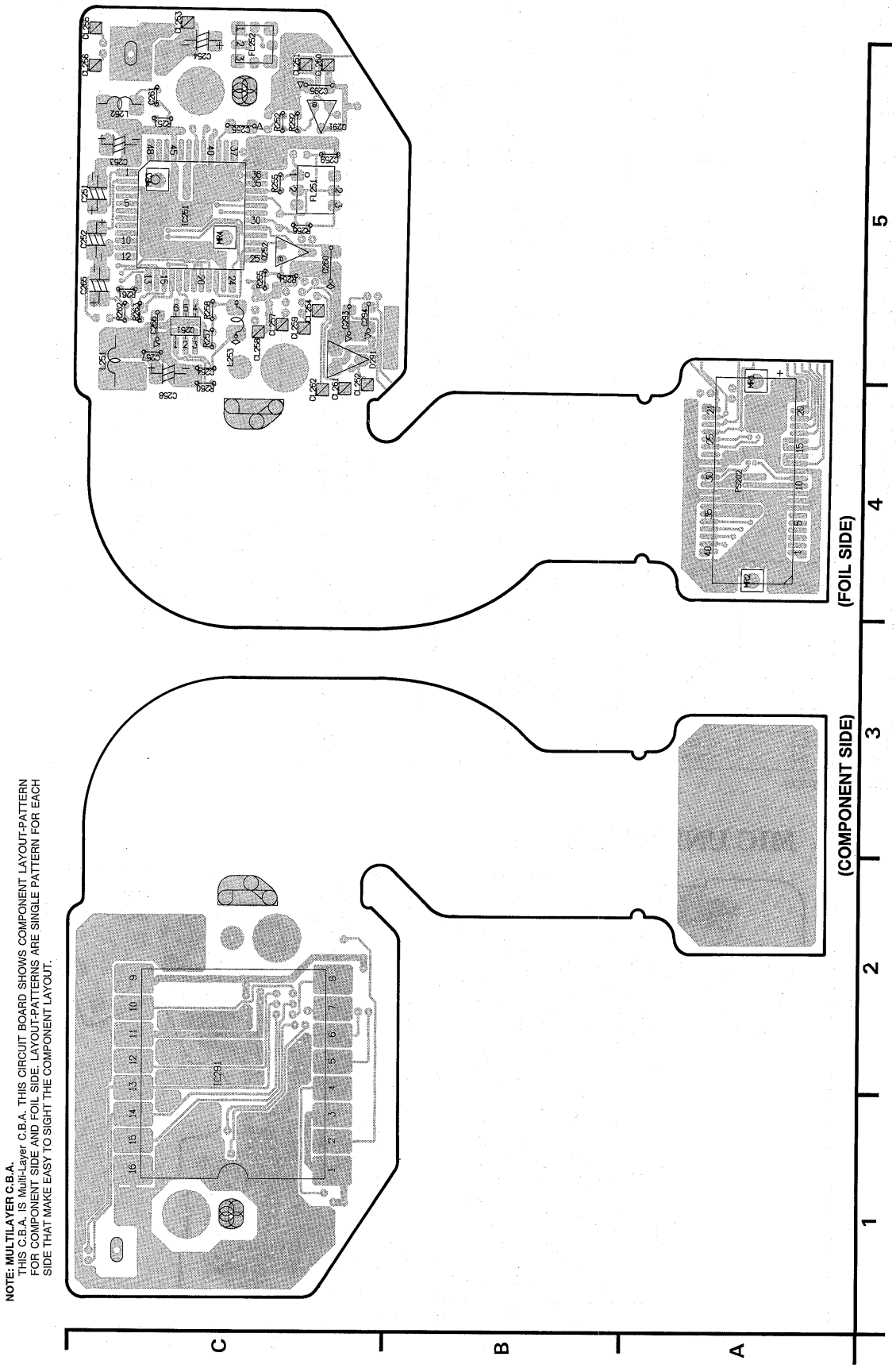
Resistor	
R1001	C-6
R1003	C-6
R1005	B-2
R1006	C-6
R1007	C-2
R1008	C-6
R1009	C-6
R1010	C-5
R1011	B-5
R1012	B-5
R1013	B-5
R1014	C-5
R1015	B-5
R1020	B-5
R1021	B-5
R1022	B-5
R1023	B-5
R1024	B-5
R1025	B-5
R1030	B-5
R1031	B-5
R1032	B-5
R1033	A-5
R1034	B-5
R1035	A-5
R1036	A-5
R1037	A-5
R1038	B-3
R1040	A-5
R1041	A-5
R1042	A-5
R1043	A-5
R1044	A-5
R1045	A-5
R1050	C-5
R1051	C-6
R1052	C-5
R1053	C-6
R1054	C-5
R1056	C-5
R1080	C-5
R1081	C-5
R1082	C-5
R1083	C-5
R1084	C-5
R1086	D-5
R1087	A-6
R1088	A-5
R1089	A-6
R1101	B-6
R1102	B-6
R1103	B-6
R1104	C-6
R1107	B-6
R1108	B-6
R1109	B-6
R1111	A-5
R1112	A-5
R1121	B-6
R1122	B-5
R1131	A-5
R1132	A-5
R1141	C-5
R1142	C-5
R1151	B-6
R1152	B-5
R1153	B-6
R1154	C-6
R1155	C-6
R1158	A-5
R1159	B-5
R1181	C-5
R1182	B-5
R1183	A-5
R1184	B-5
R1186	A-6
R1187	A-6

ADDRESS INFORMATION

3-17. MIC UNIT (VEK8359)

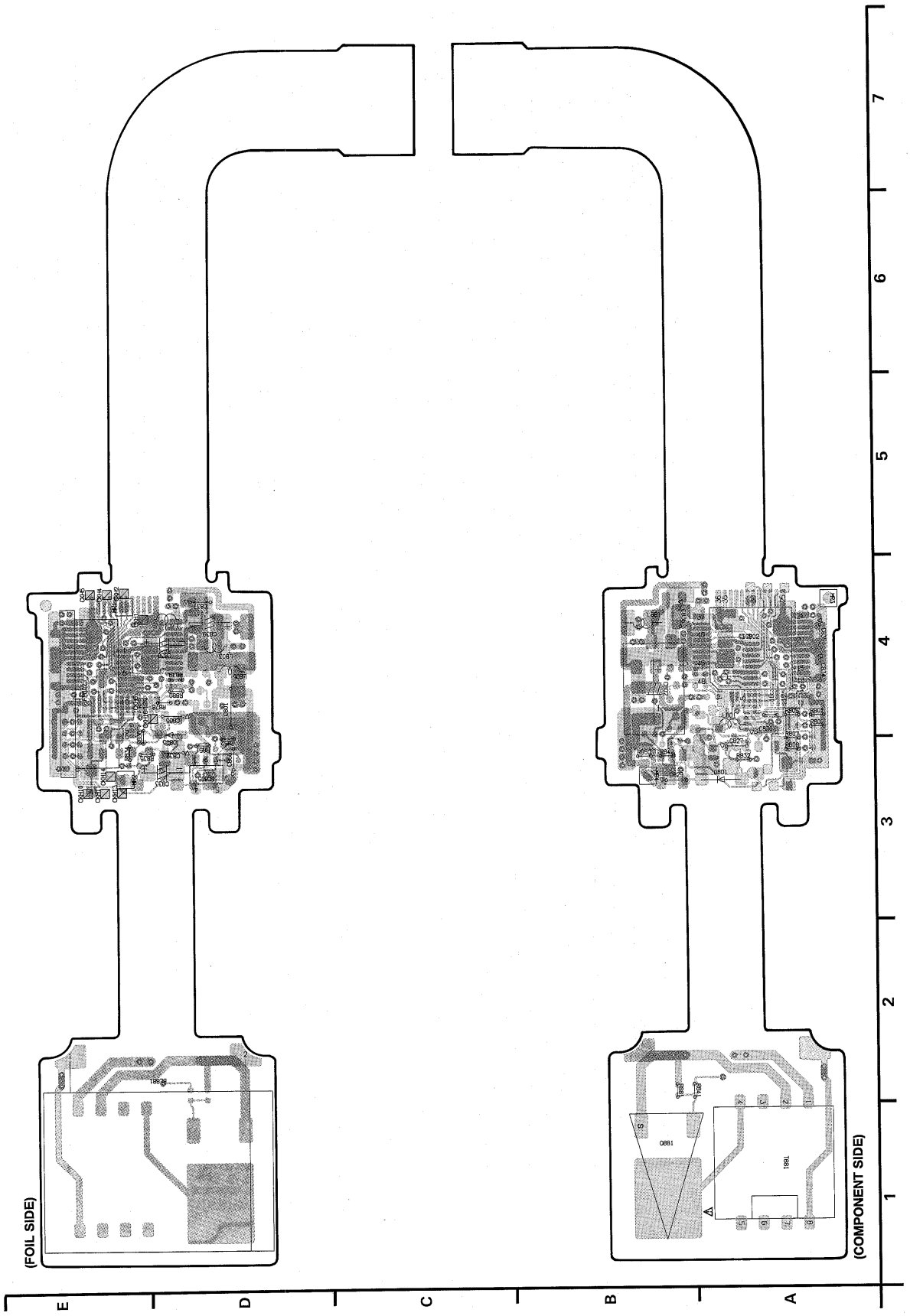


3-18. CDS/AGC C.B.A. (VEP22282A)



NOTE: MULTILAYER C.B.A.
THIS C.B.A. IS Multi-Layer C.B.A. THIS CIRCUIT BOARD SHOWS COMPONENT LAYOUT-PATTERN FOR COMPONENT SIDE AND FOIL SIDE. LAYOUT-PATTERNS ARE SINGLE PATTERN FOR EACH SIDE THAT MAKE EASY TO SIGHT THE COMPONENT LAYOUT.

3-19. E.V.F. C.B.A. (VEP28252B)

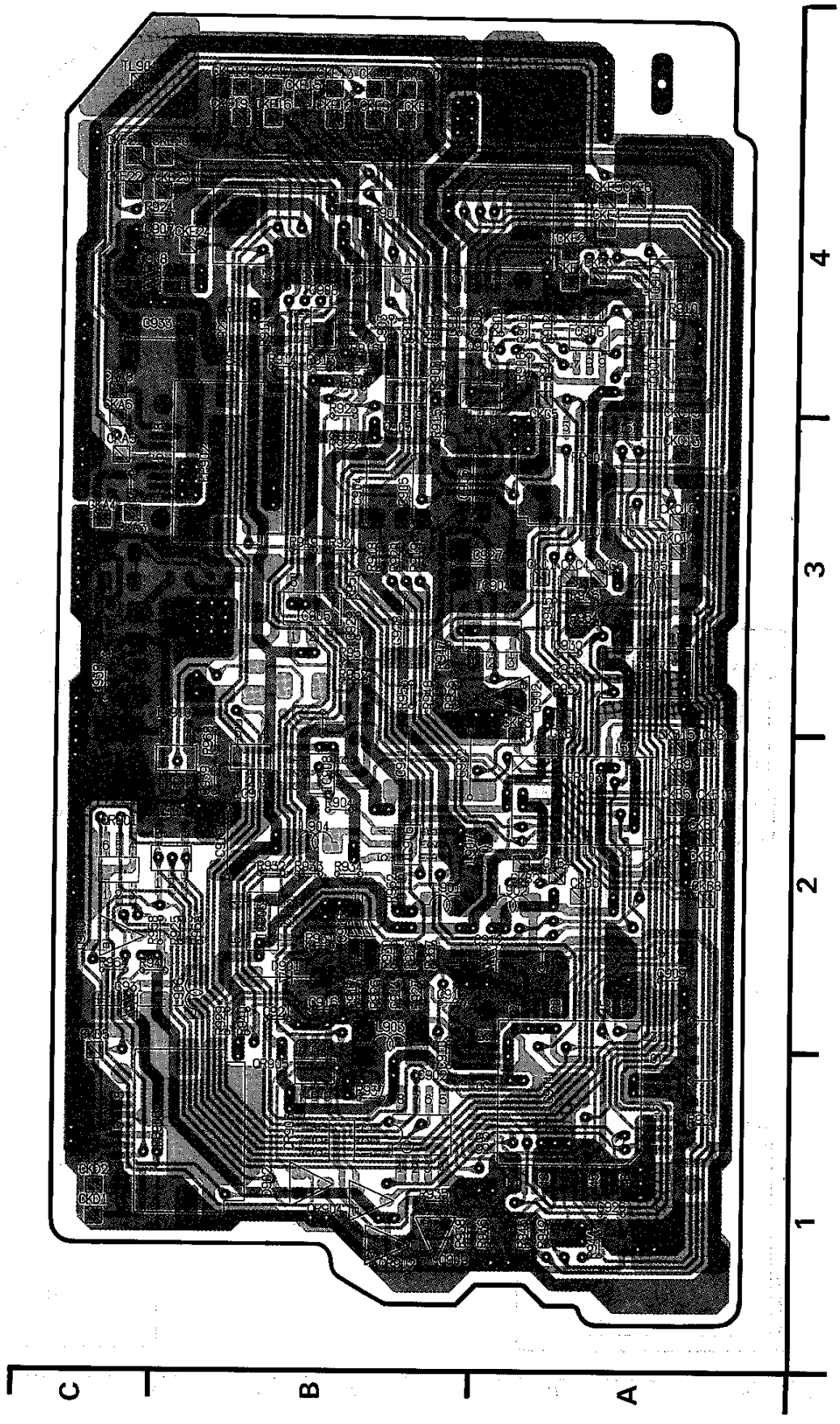


3-20. MONITOR C.B.A. (VEP26207B)

MONITOR C.B.A.

Integrated Circuit		IC908	B-2	Q904	A-4	Transistor & Resistor		Connector	
IC901	A-1	IC910	B-2	Q905	B-4	QR901	C-2	FP901	B-4
IC902	B-1	IC911	B-2	Q906	A-4	QR902	B-1	FP902	B-3
IC903	B-2			Q907	A-4	QR903	B-1	FP903	A-2
IC904	A-3	**Transistor**		Q908	B-4	QR904	B-1	FP904	A-3
IC905	B-3	Q901	B-2	Q909	B-1	QR905	B-1	FP905	C-1
IC906	B-2	Q802	A-3	Q910	C-2				
IC907	A-3	Q903	B-4						

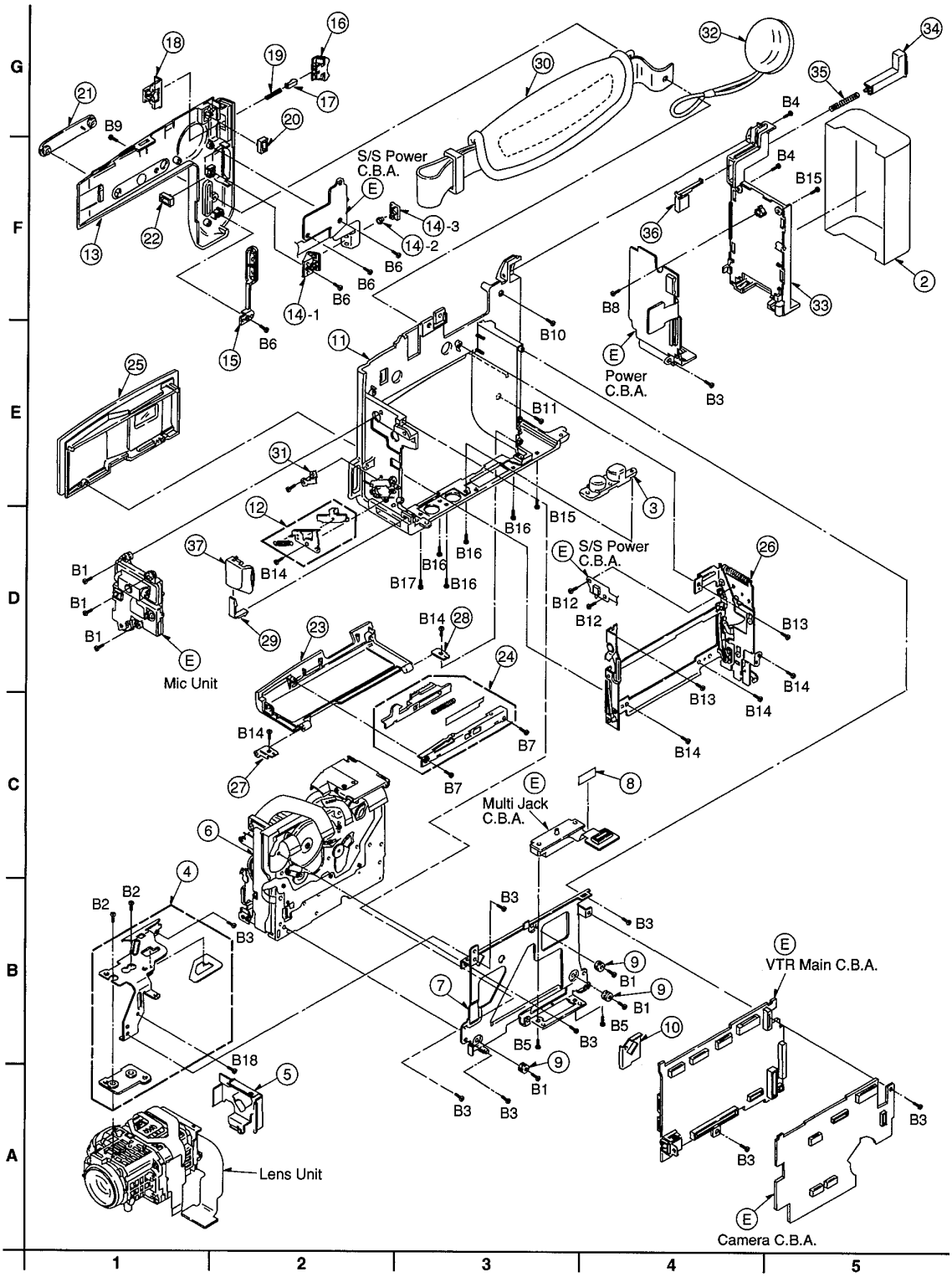
ADDRESS INFORMATION



SECTION 4 EXPLODED VIEWS & PARTS LIST

4-1. EXPRODED VIEWS & MECHANICAL REPLACEMENT PARTS LIST

❶ FRAME & CASING PARTS SECTION (1)

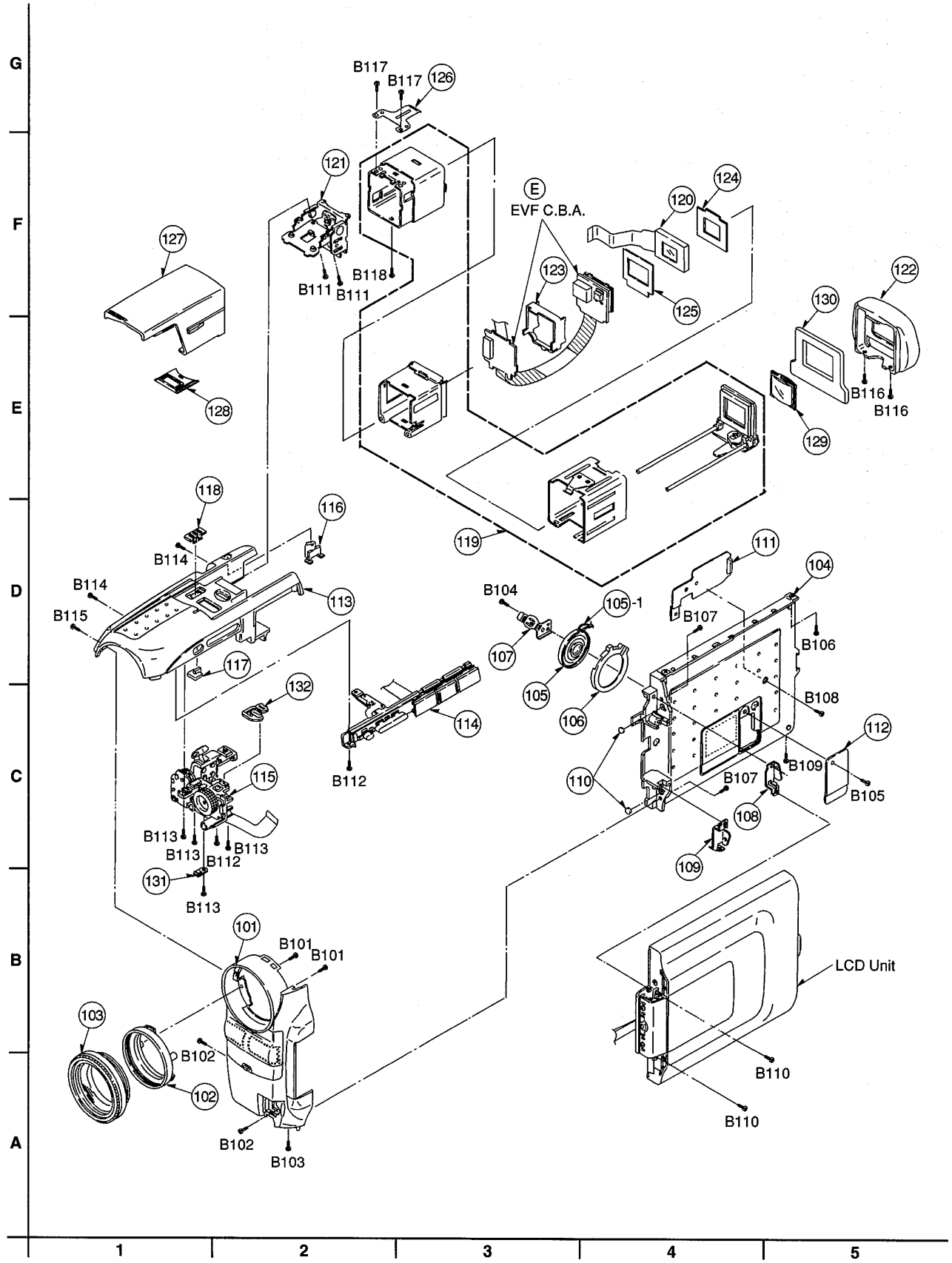


Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
2 (1)	VYF2525	BATTERY DUMMY CASE U.	1	
3 (1)	VMD2955	TRIPOD FRAME	1	
4 (1)	VXA6128	LENS FRAME U.	1	
5 (1)	VYQ1583	GDS/AGC SHIELD CASE U.	1	
6 (1)	VUA1327	MECHA. UNIT	1	
7 (1)	VMP5612	MECHA. FRAME	1	
8 (1)	VGQ4999	MULTI SHEET	1	
9 (1)	VMG1107	MECHA. DUMPER RUBBER	3	
10 (1)	VGQ4837	BARRIER	1	
11 (1)	VYK8256	GRIP CASE (1) U.	1	
12 (1)	VXL2807	EJECT U.	1	
13 (1)	VKM5060	GRIP PIECE	1	
14-1 (1)	VGQ4835	RUBBER HOLDER	1	
14-2 (1)	VMG1112	RUBBER	1	
14-3 (1)	VGQ4836	RUBBER FIXING PIECE	1	
15 (1)	VYK8520	S/S BUTTON U.	1	
16 (1)	VGU8012	POWER BUTTON	1	
17 (1)	VGU7748	POWER LOCK BUTTON	1	
18 (1)	VGU7749	POWER LOCK PIECE	1	
19 (1)	VMB3201	POWER LOCK SPRING	1	
20 (1)	VGL0788	POWER LIGHT	1	
21 (1)	VKF2848	COVER PIECE	1	
22 (1)	VGQ4977	S/S BUTTON CUSHION	1	
23 (1)	VYK8569	CASSETTE COVER (S) 1U.	1	
24 (1)	VXU1494	COVER LOCK U.	1	
25 (1)	VYK8570	CASSETTE COVER (C) U.	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
26 (1)	VXA6161	OUT HOLDER U.	1	
27 (1)	VXA6129	COVER ANGLE (F) U.	1	
28 (1)	VXA6130	COVER ANGLE (R) U.	1	
29 (1)	VGQ4820	DV COVER HINGE	1	
30 (1)	VYC0799	GRIP BELT	1	
31 (1)	VML3351	EJECT FIXING ANGLE	1	
32 (1)	VYF2519	HOOD CAP U.	1	
33 (1)	VYK8571	BATTERY CASE (1) U.	1	
34 (1)	VGU7976	BATTERY LOCK BUTTON	1	
35 (1)	VMB3210	BATTERY LOCK SPRING	1	
36 (1)	VGQ4790	BATTERY LOCK PIECE	1	
37 (1)	VKF2962	DV COVER	1	
B1 (1)	VHD1133	SCREW	6	
B2 (1)	VHD1132	SCREW	2	
B3 (1)	XQN16+B3FN	SCREW	8	
B4 (1)	XQN16+B3FZ	SCREW	3	
B5 (1)	XQN16+BJ3FN	SCREW	2	
B6 (1)	XQN2+BJ4	SCREW	4	
B7 (1)	XQN14+B2FN	SCREW	2	
B8 (1)	VHD1152	SCREW	1	
B9 (1)	XQN16+B45FZ	SCREW	1	
B10 (1)	XQN2+AJ5FZ	SCREW	1	
B11 (1)	XQN2+AJ4FZ	SCREW	1	
B12 (1)	XQN14+B14FN	SCREW	2	
B13 (1)	VHD1201	SCREW	2	
B14 (1)	XQN16+B2FZ	SCREW	6	
B15 (1)	XQN16+BJ6FZ	SCREW	2	
B16 (1)	XQN16+B5FZ	SCREW	4	
B17 (1)	XQN16+BJ5FZ	SCREW	1	
B18 (1)	XQS16+A8	SCREW	1	

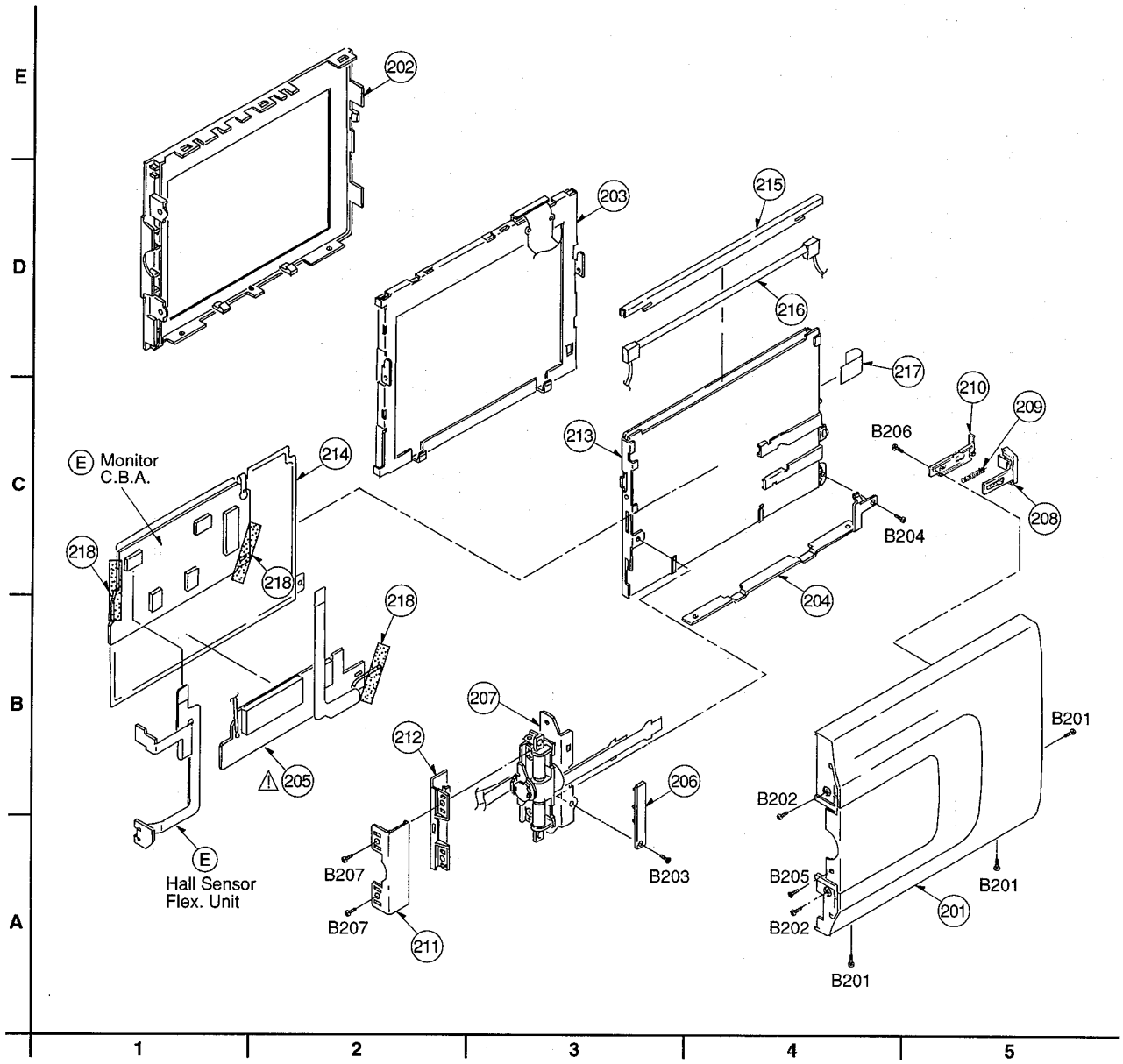
❷ FRAME & CASING PARTS SECTION (2)



Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
101 (2)	VYK8727	FRONT CASE (1) U.	1	
102 (2)	VDW4859	FRONT SCREW	1	
103 (2)	VYQ1506	LENS HOOD U.	1	
104 (2)	VYK8580	SIDE CASE (2) U.	1	
105 (2)	VEK8361	SPEAKER U.	1	
105-1 (2)	VEE0C16	SPEAKER WIRE	1	
106 (2)	VMG1106	SPEAKER RUBBER	1	
107 (2)	VMC1390	SPEAKER FIXING SPRING	1	
108 (2)	VMP5610	MAGNET FIXING ANGLE (A)	1	
109 (2)	VMP5611	MAGNET FIXING ANGLE (B)	1	
110 (2)	VSQ1041	LCD ROTARY DET. MAGNET	2	
111 (2)	VGQ4810	LCD LOCK COVER	1	
112 (2)	VKF2833	EVR COVER	1	
113 (2)	VYK8562	TOP CASE (1) U.	1	
114 (2)	VEK8488	OPERATION FLEX. U.	1	
115 (2)	VEK8305	TOP OPERATION U.	1	
116 (2)	VGU7898	PHOTO SHOT BUTTON	1	
117 (2)	VGL0787	FULLAUTO LIGHT	1	
118 (2)	VGU7975	FULLAUTO BUTTON	1	
119 (2)	VXA6172	EVF SLIDE HOLDER U.	1	
120 (2)	F05KM100	LCD PANEL	1	
121 (2)	VXA6086	EVF HINGE U.	1	
122 (2)	VMG1159	EYE CAP	1	
123 (2)	VMX2717	SPACER	1	
124 (2)	VGQ5056	LCD MASK	1	
125 (2)	VMG1105	EVF RUBBER	1	
126 (2)	VMC1389	EVF CLICK SPRING	1	
127 (2)	VGQ5057	EVF SLIDE CASE	1	
128 (2)	VGQ4809	WINDOW COVER	1	
129 (2)	VDL0737	EVF LENS	1	
130 (2)	VGQ4982	EVF LENS SHEET	1	
131 (2)	VEK8384	DEW SENSOR	1	
132 (2)	VGU7974	MENU BUTTON	1	
B101 (2)	XQN16+BJ35	SCREW	2	
B102 (2)	XQN16+B3FN	SCREW	2	
B103 (2)	XQN16+BJ6FN	SCREW	2	
B104 (2)	XQN2+BJ35FZ	SCREW	1	
B105 (2)	XQN16+B35FZ	SCREW	1	
B106 (2)	XQN16+BJ5FZ	SCREW	1	
B107 (2)	XQN16+BJ6FZ	SCREW	2	
B108 (2)	XQN16+BJ4FZ	SCREW	2	
B109 (2)	XQN16+B25FZ	SCREW	1	
B110 (2)	VHD0768	SCREW	2	
B111 (2)	VHD1157	SCREW	2	
B112 (2)	XQN16+BJ4	SCREW	2	
B113 (2)	XQN2+BJ4	SCREW	4	
B114 (2)	XQN16+B3FZ	SCREW	2	
B115 (2)	XQN16+B5FN	SCREW	1	
B116 (2)	XQN16+B2FZ	SCREW	2	
B117 (2)	VHD1196	SCREW	2	
B118 (2)	VHD1205	SCREW	1	

❸ LCD PARTS SECTION

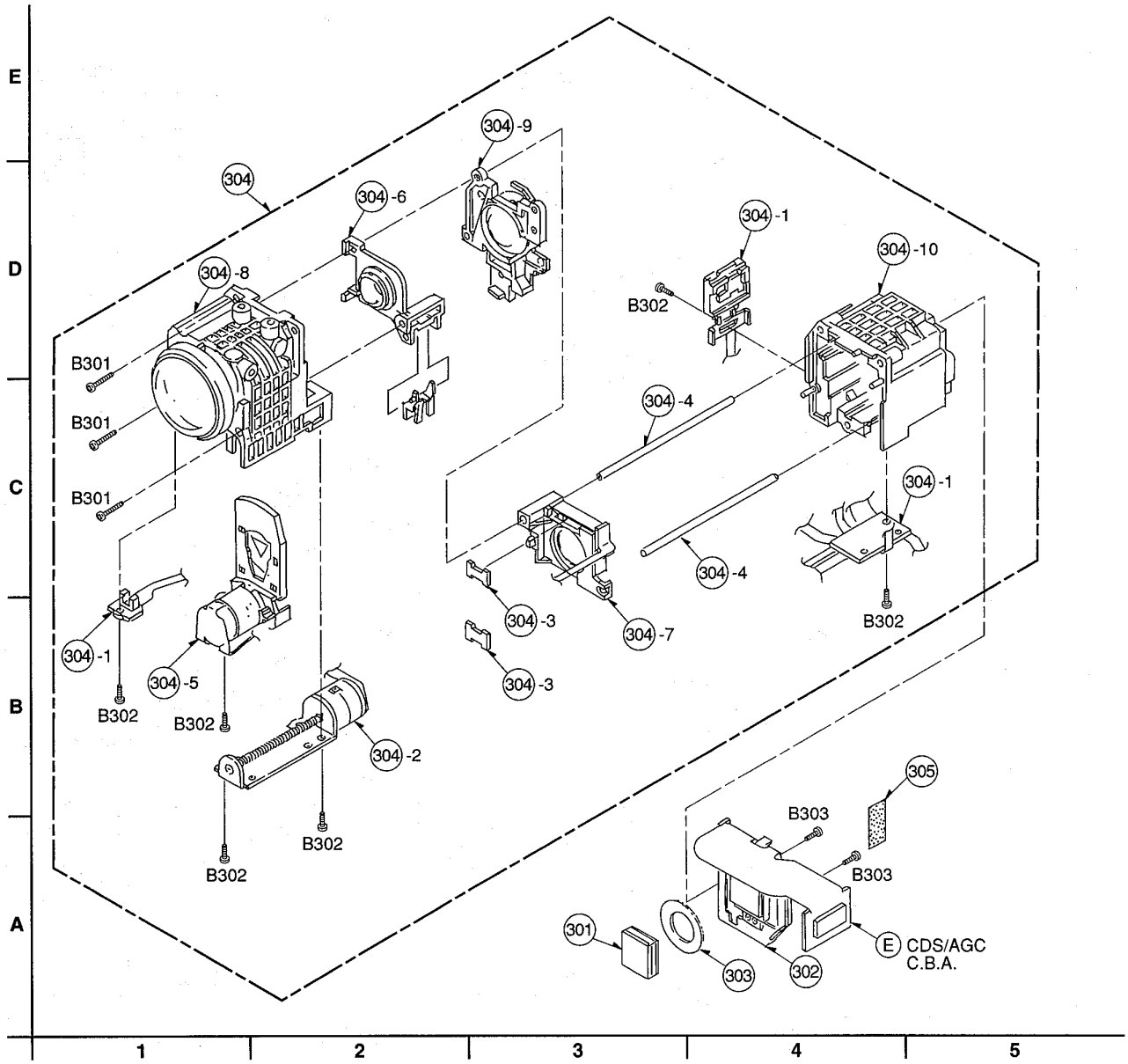


Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
201 (3)	VYK8731	LCD TOP CASE (1) U.	1	
202 (3)	VKM4866	LCD BOTTOM CASE	1	
203 (3)	EDTCA16QC0	LCD PANEL	1	
204 (3)	VMP5605	LCD CASE FIXING ANGLE	1	
205 (3)	VEK8299	BACK LIGHT U.	1	
206 (3)	VGQ4761	LCD FLEX. FIXING PIECE	1	
207 (3)	VXD0283	LCD ROTARY HINGE (1) U.	1	
208 (3)	VGQ4756	LCD LOCK PIECE	1	
209 (3)	VMB3217	LCD LOCK SPRING	1	
210 (3)	VMP5606	LOCK FIXING PLATE	1	
211 (3)	VGQ4966	HINGE TOP COVER	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
212 (3)	VGQ4817	HINGE BOTTOM COVER	1	
213 (3)	VYQ1494	BACK LIGHT PANEL U.	1	
214 (3)	VGQ4757	LCD SHIELD BARRIER	1	
215 (3)	VGL0782	REFLECTOR	1	
216 (3)	VLL0209	LAMP U.	1	
217 (3)	VGQ4976	LCD PROTECT SHEET	1	
218 (3)	VGQ2184	PROTECT SHEET	3	
219 (3)	VJB26200	LCD SIGNAL FLEX.	1	
220 (3)	VJB26201	LCD OPERATION FLEX.	1	
B201 (3)	XQN16+B25FN	SCREW	3	
B202 (3)	VHD1154	SCREW	2	
B203 (3)	XQS16+A4	SCREW	1	
B204 (3)	XQN16+B2	SCREW	1	
B205 (3)	XQS2+A5FN	SCREW	1	
B206 (3)	XQS16+AJ3	SCREW	1	
B207 (3)	XQN2+B3FZ	SCREW	2	

❹ CAMERA LENS SECTION

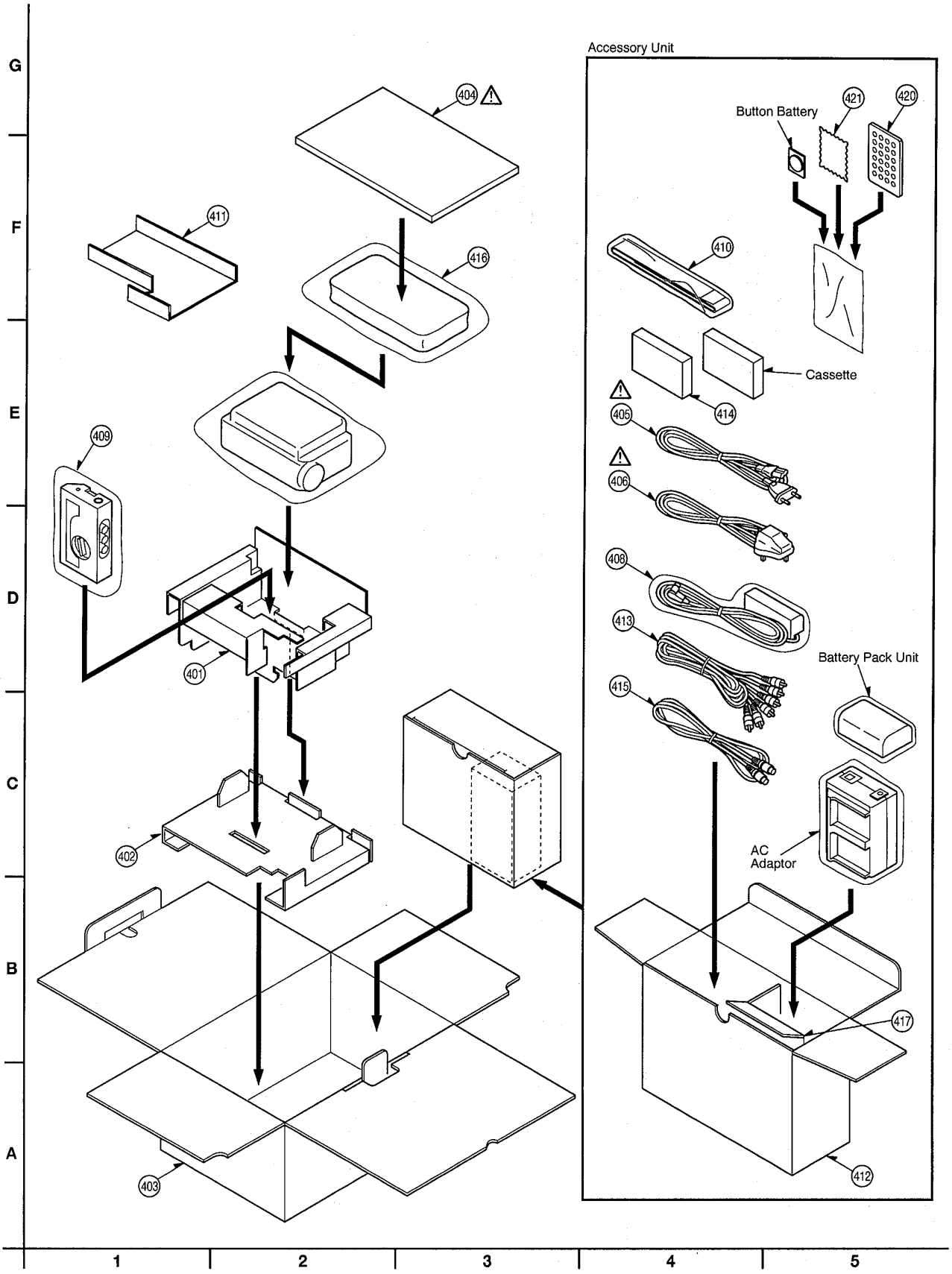


Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
301 (4)	VDL0856	CRYSTAL FILTER	1	
302 (4)	VEK8477	CCD U.	1	
303 (4)	VMX2754	CCD CUSHION	1	
304 (4)	VXW0399	LENS U.	1	
304-1 (4)	VEK8412	LENS FLEX.	1	
304-2 (4)	VEM0641	ZOOM MOTOR U.	1	
304-3 (4)	VMA9981	SIDE YOKE	2	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
304-4 (4)	VMS6182	GUIDE POLE	2	
304-5 (4)	VXL2781	IRIS U.	1	
304-6 (4)	VXP1847	2ND MOVING FRAME U.	1	
304-7 (4)	VXP1879	4TH MOVING FRAME U.	1	
304-8 (4)	VXQ0687	MAIN FRAME U.	1	
304-9 (4)	VXQ0688	3RD MOVING FRAME U.	1	
304-10 (4)	VXQ0739	MASTER FLANGE U.	1	
305 (4)	VMT0933	PROTECT SHEET	1	
B301 (4)	XQN16+GJ8	SCREW	3	
B302 (4)	XQN16+GJ5	SCREW	6	
B303 (4)	XQN16+GJ4FY	SCREW	2	

❺ PACKING PARTS & ACCESSORIES SECTION



Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
401 (5)	VPN4946	CUSHION (UPPER)	1	
402 (5)	VPN4947	CUSHION (LOWER)	1	
403 (5)	VPK2153	PACKING	1	NV-DS77EN
403 (5)	VPK2154	PACKING	1	NV-DS77ENA
404 (5)	VQT7637	OPERATING INSTRUCTIONS	1	
		(CHINESE, ENGLISH,		
		RUSSIAN, ARABIC)		
⚠ 405 (5)	VJA0998	AC CORD	1	NV-DS77EN
⚠ 405 (5)	VJA0754	AC CORD	1	NV-DS77ENA
⚠ 406 (5)	VJA0940	AC CORD	1	NV-DS77EN
408 (5)	VEK8328	DC CABLE U.	1	
409 (5)	VSK0529	OUTPUT TERMINAL BOX	1	
410 (5)	VFC2905	SHOULDER BELT	1	
411 (5)	VPN4958	PAD	1	
412 (5)	VPN4948	ACCESSORIES PACKING	1	
413 (5)	VJA0788	AV OUTPUT CABLE	1	
414 (5)	VFK1451	CLEANING CASSETTE	1	
415 (5)	VJA0658	S-VIDEO CABLE	1	

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
416 (5)	VFC2924	SOFT CASE	1	
417 (5)	VPN4949	PAD	1	
420 (5)	VEQ2142	REMOTE CONTROLLER	1	
421 (5)	VFC1792	LENS CLEANING	1	
	VFK1437	FLAT CABLE 110P	1	
	VFK1438	FLAT CABLE 80P	1	
	VFK1439	FLAT CABLE 30P	2	
	VFK1440	FLAT CABLE 10P	2	
	VFK1441	FLAT CABLE 8P	1	
	VFK1442	FLAT CABLE 21P	1	
	VFK1443	FLAT CABLE 18P	4	
	VFK1453	FLAT CABLE 40P	1	
	VFK1452	FLAT CABLE 17P	1	
	VFK1284	FLAT CABLE 24P	1	
	VFA0272	232C (M3) I/F CABLE	1	
	VFK1308E	MEASURING BOARD	1	
	VFK1309	EVR CONNECTION BOARD	1	
	VFK1317	FLAT CABLE 30P	2	
	VJA0941	DC OUTPUT CABLE	1	FOR AC ADAPTOR
	VFK1164TAR3A	SETUP RING	1	FOR COLLIMATOR
	VFM3110EDS	ALIGNMENT TAPE	1	

4-2. ELECTRICAL REPLACEMENT PARTS LIST

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE: Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified,
All resistors are in OHMS, K=1,000 OHMS. All capacitors are in MICROFARADS (uf), P=uuF.
4. The P.C. Board units marked width "■" show below the main assembled parts.
5. The marking (RTL) indicaters the retention time is limited for this item.
After the discontinuation of this assembly in production, it will no longer be available.

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
■	VUE03E69B	VTR MAIN C. B. A.	1	(RTL)
■	VEP00Z70A	CAMERA C. B. A.	1	(RTL)
■	VEP28252B	E. V. F. C. B. A.	1	(RTL)
■	VEP01817D	POWER C. B. A.	1	(RTL)
■	VEP22282A	CDS/AGC C. B. A.	1	(RTL)
■	VEK8412	LENS FLEX. CARD	1	(RTL)
■	VEP26207B	MONITOR C. B. A.	1	(RTL)
■	VEP06C44A	SENSOR FLEX. CARD	1	(RTL)
■	VEP06C42A	S/S POWER FLEX. CARD C. B. A.	1	(RTL)
■	VEP00Z38B	MULTI JACK C. B. A.	1	(RTL)
■	VEK8359	MIC UNIT	1	(RTL)
■	VEP00Z70A	CAMERA C. B. A.		(RTL)
C102	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C103	ECUX1A104KBQ	C. CAPACITOR CH 10V 0. 1U	1	
C202	ECUX1C104KBV	C. CAPACITOR CH 16V 0. 1U	1	
C203	ECUX1A473KBQ	C. CAPACITOR CH 10V 0. 047U	1	
C204	ECST1DD226Z	T. CAPACITOR CH 20V 22U	1	
C205	ECUM0J335VBN	C. CAPACITOR CH 6. 3V 3. 3U	1	
C206	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C207	ECUX1E102KBQ	C. CAPACITOR CH 25V 1000P	1	
C208, 09	ECUX1H060CCQ	C. CAPACITOR CH 50V 6P	2	
C211	ECUX1C104ZFQ	C. CAPACITOR CH 16V 0. 1U	1	
C212	ECST0JY226Z	T. CAPACITOR CH 6. 3V 22U	1	
C215	ECUX1H180JCQ	C. CAPACITOR CH 50V 18P	1	
C223	ECUX1A104KBQ	C. CAPACITOR CH 10V 0. 1U	1	
C226	ECUM1C105KBM	C. CAPACITOR CH 16V 1U	1	
C227	ECUX1E102KBQ	C. CAPACITOR CH 25V 1000P	1	
C229	ECUM1C106VB	C. CAPACITOR CH 16V 10U	1	
C230	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C232	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C235	ECUX1A104KBQ	C. CAPACITOR CH 10V 0. 1U	1	
C239	ECUX1A105ZFV	C. CAPACITOR CH 10V 1U	1	
C601	ECST0JX476Z	T. CAPACITOR CH 6. 3V 47U	1	
C602	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	1	
C603-10	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	8	
C611-13	ECUX1H103KBV	C. CAPACITOR CH 50V 0. 01U	3	
C614	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C615	ECUX1H181JCQ	C. CAPACITOR CH 50V 180P	1	
C616	ECUX1H680JCQ	C. CAPACITOR CH 50V 68P	1	
C617-19	ECUX1H560JCQ	C. CAPACITOR CH 50V 56P	3	
C620-26	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	7	
C630-32	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	3	
C633	ECST0JX476Z	T. CAPACITOR CH 6. 3V 47U	1	
C634	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	1	
C635-42	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	8	
C643-45	ECUX1H103KBV	C. CAPACITOR CH 50V 0. 01U	3	
C646	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C647	ECUX1H181JCQ	C. CAPACITOR CH 50V 180P	1	
C648	ECUX1H680JCQ	C. CAPACITOR CH 50V 68P	1	
C649-51	ECUX1H560JCQ	C. CAPACITOR CH 50V 56P	3	
C652-58	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	7	
C662-65	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	4	
C666	ECUM1C106KB	C. CAPACITOR CH 16V 10U	1	
C667, 68	EEJK0JS106	E. CAPACITOR 6. 3V 10U	2	
C669	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C670	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	1	
C671, 72	EEJK0JS106	E. CAPACITOR 6. 3V 10U	2	
C673, 74	ECUX0J474KBV	C. CAPACITOR CH 6. 3V 0. 47U	2	
C675	ECUX1E222KBQ	C. CAPACITOR CH 25V 2200P	1	
C676	ECUX1C104KBV	C. CAPACITOR CH 16V 0. 1U	1	
C677	ECST0JX476Z	T. CAPACITOR CH 6. 3V 47U	1	
C701	ECUX1E102KBQ	C. CAPACITOR CH 25V 1000P	1	
C702	ECUX1H390JCQ	C. CAPACITOR CH 50V 39P	1	
C703	ECUX1C822KBQ	C. CAPACITOR CH 16V 8200P	1	
C704	ECUX1A104KBQ	C. CAPACITOR CH 10V 0. 1U	1	
C705, 06	ECUX1C104KBV	C. CAPACITOR CH 16V 0. 1U	2	
C707	ECUM1A105KBN	C. CAPACITOR CH 10V 1U	1	
C708	ECUX1C104KBV	C. CAPACITOR CH 16V 0. 1U	1	
C709, 10	ECUX1C333KBQ	C. CAPACITOR CH 16V 0. 033U	2	
C711	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C712	ECUX1C223KBQ	C. CAPACITOR CH 16V 0. 022U	1	
C713	ECUX1E562KBQ	C. CAPACITOR CH 25V 5600P	1	
C714	ECUX1C104ZFQ	C. CAPACITOR CH 16V 0. 1U	1	
C715	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C716	ECUX1E222KBQ	C. CAPACITOR CH 25V 2200P	1	
C717	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C718	ECUX1E472KBQ	C. CAPACITOR CH 25V 4700P	1	
C719	ECUX1H101JCQ	C. CAPACITOR CH 50V 100P	1	
C720	ECUM1C224KBN	C. CAPACITOR CH 16V 0. 22U	1	
C721, 22	ECUX1E102KBQ	C. CAPACITOR CH 25V 1000P	2	
C723	ECUX1C104KBV	C. CAPACITOR CH 16V 0. 1U	1	
C4201, 02	ECUX1C333KBQ	C. CAPACITOR CH 16V 0. 033U	2	
C4203	VCS0JJ106	E. CAPACITOR 6. 3V 10U	1	
C4204	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C4205	ECUX1E222KBQ	C. CAPACITOR CH 25V 2200P	1	
C4206	ECUX1C103KBQ	C. CAPACITOR CH 16V 0. 01U	1	
C4207	ECUX1C104ZFQ	C. CAPACITOR CH 16V 0. 1U	1	
C4208	ECUX1E122KBQ	C. CAPACITOR CH 25V 1200P	1	
C4209, 10	ECUX0J474KBV	C. CAPACITOR CH 6. 3V 0. 47U	2	
C4211	ECUX1E122KBQ	C. CAPACITOR CH 25V 1200P	1	
C4212, 13	ECST0JX476Z	T. CAPACITOR CH 6. 3V 47U	2	
C4214, 15	ECUX1A104KBQ	C. CAPACITOR CH 10V 0. 1U	2	
C4218	VCS0JJ106	E. CAPACITOR 6. 3V 10U	1	
C4219	ECUX1C104ZFQ	C. CAPACITOR CH 16V 0. 1U	1	
C4702	EEJK0JS106	E. CAPACITOR 6. 3V 10U	1	
C4703	ECUX1C153KBQ	C. CAPACITOR CH 16V 0. 015U	1	
D205	1SS355	DIODE	1	
FP601, 02	VJS3971B017	CONNECTOR (FEMALE) 17P	2	
FP603	VJS4012B018	CONNECTOR (FEMALE) 18P	1	
FP701	VJS3971B021	CONNECTOR (FEMALE) 21P	1	
IC101	RN5RG46AATRS	IC	1	
IC201	MN31121SA	IC	1	
IC202	MN5245	IC	1	
IC204	TC7SH04FU	IC	1	
IC205	TC7SHU04FU	IC	1	
IC207, 08	TC7SH08FU	IC	2	
IC601, 02	IR3Y35M	IC	2	
IC603	NJM78L12UA	IC	1	
IC604	BU4053BCFV	IC	1	
IC605	PQ20VZ1U	IC	1	
IC607	BA7071F	IC	1	
IC608	TC4W53FU	IC	1	
IC701	TB6535F	IC	1	
IC702	NJM2115VA	IC	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
IC4201	BA7785FS	IC	1	
IC4701	M9831-103MSK	IC	1	
L201	VLQ0808J100	COIL 10UH	1	
L202	VLQ0807K100	COIL 10UH	1	
L204	VLQ0807K100	COIL 10UH	1	
L205	VLQ0808J1R5	COIL 1.5UH	1	
L208	VLQ0807K100	COIL 10UH	1	
L210	VLQ0807K100	COIL 10UH	1	
L601-03	VLQ0807K100	COIL 10UH	3	
L605	VLQ0807K100	COIL 10UH	1	
L606,07	VLQ0807K220	COIL 22UH	2	
L702,03	VLQ0807K100	COIL 10UH	2	
L4201	VLQ0807K100	COIL 10UH	1	
L4202	VLQ0464K100	COIL 10UH	1	
LB202	VLP0324A601	FILTER	1	
PP202	VJP4009C040	CONNECTOR (MALE) 40P	1	
PP702	VJP4028C110	CONNECTOR (MALE) 110P	1	
PP710	VJP4009C030	CONNECTOR (MALE) 30P	1	
Q101	2SB970X	TRANSISTOR	1	
Q102	2SB1073	TRANSISTOR	1	
Q601-06	2SB970X	TRANSISTOR	6	
Q607	2SB1462-R	TRANSISTOR	1	
Q608	2SB970X	TRANSISTOR	1	
Q609-11	2SD2216	TRANSISTOR	3	
Q701	2SD601A	TRANSISTOR	1	
Q4201	XP4401	TRANSISTOR	1	
Q4701	2SD1979	TRANSISTOR	1	
QR601	MRN1103	TRANSISTOR-RESISTOR	1	
QR604-06	MRN1103	TRANSISTOR-RESISTOR	3	
QR607	XP4314	TRANSISTOR	1	
QR609	XP4314	TRANSISTOR	1	
QR610	MRN1103	TRANSISTOR-RESISTOR	1	
QR701	MRN1111	TRANSISTOR-RESISTOR	1	
QR702	XP6213	TRANSISTOR	1	
QR4201-03	MRN1103	TRANSISTOR-RESISTOR	3	
R101	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R102	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R104	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R105	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R202	ERJ2GEJ105	M.RESISTOR CH 1/16W 1M	1	
R203	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R204	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R206	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R207	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R208	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R209	ERJ3GEY0R00	M.RESISTOR CH 1/16W 0	1	
R210	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R211	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R213	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R214	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R216	ERJ2GEJ221	M.RESISTOR CH 1/16W 220	1	
R217	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R218	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R220	ERJ2GEJ105	M.RESISTOR CH 1/16W 1M	1	
R222	ERJ2GEJ151	M.RESISTOR CH 1/16W 150	1	
R223	ERJ2GEJ391	M.RESISTOR CH 1/16W 390	1	
R227	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R228	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R229	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R237	ERJ2GEJ152	M.RESISTOR CH 1/16W 1.5K	1	
R238	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R239	ERJ2GEJ152	M.RESISTOR CH 1/16W 1.5K	1	
R251	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R504	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R507-12	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	6	
R513	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R515	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R516	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R517	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R518	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R519	ERJ2RHD104	M.RESISTOR CH 1/16W 100K	1	
R521	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R522	ERJ2GEJ273	M.RESISTOR CH 1/16W 27K	1	
R523	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R524	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R525	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R526	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R527-32	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	6	
R537,38	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	2	
R546	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R551	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R596,97	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	2	
R601	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R602,03	ERJ2RHD102	M.RESISTOR CH 1/16W 1K	2	
R604	ERJ2RHD272	M.RESISTOR CH 1/16W 2.7K	1	
R605	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R606	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R607	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R608	ERJ2GEJ273	M.RESISTOR CH 1/16W 27K	1	
R609,10	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	2	
R611	ERJ2GEJ393	M.RESISTOR CH 1/16W 39K	1	
R612	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R613	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R614,15	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	2	
R616	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R617	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R619	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R621-23	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	3	
R624	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R625	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R629	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R631	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R634	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	
R637	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R639	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R640	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R642	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R644	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R647	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R648-50	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	3	
R651,52	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	2	
R653	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R656-58	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	3	
R659	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R661	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R663	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R664	ERJ2GEJ272	M.RESISTOR CH 1/16W 2.7K	1	
R665	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R666	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R667,68	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	2	
R671	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R673	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R674	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R677	ERJ2RHD912	M.RESISTOR CH 1/16W 9.1K	1	
R680	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R682	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R683	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R685	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R687	ERJ2RHD393	M.RESISTOR CH 1/16W 39K	1	
R690	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R691-93	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	3	
R694,95	ERJ2GEJ683	M.RESISTOR CH 1/16W 68K	2	
R696-99	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	4	
R701,02	ERJ3GEYJ2R7	M.RESISTOR CH 1/16W 2.7	2	
R703	ERJ6RQF1R5	M.RESISTOR CH 1/10W 1.5	1	
R704,05	ERJ6RBB472	M.RESISTOR CH 1/10W 4.7K	2	
R706	ERJ2GEJ274	M.RESISTOR CH 1/16W 270K	1	
R707	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R708	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R709	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R710	ERJ2GEJ224	M.RESISTOR CH 1/16W 220K	1	
R711,12	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	2	
R713	ERJ2GEJ474	M.RESISTOR CH 1/16W 470K	1	
R714	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R715	ERJ2GEJ221	M.RESISTOR CH 1/16W 220	1	
R716	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R717	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R718	ERJ2GEJ514	M.RESISTOR CH 1/16W 510K	1	
R719	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R720	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R721,22	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	2	
R723	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R724	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R725	ERJ2GEJ124	M.RESISTOR CH 1/16W 120K	1	
R726	ERJ3GEYJ101	M.RESISTOR CH 1/16W 100	1	
R727	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R728	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R4211	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R4220	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R4221	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4222	ERJ2GEJ273	M.RESISTOR CH 1/16W 27K	1	
R4223	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R4299	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R4702	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R4703	ERJ2GEJ154	M.RESISTOR CH 1/16W 150K	1	
R4704	ERJ2GEJ392	M.RESISTOR CH 1/16W 3.9K	1	
R4705	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
X201	VSX0895	CRYSTAL OSCILLATOR	1	
X4701	VSX0982	CRYSTAL OSCILLATOR	1	
■	VEP28252B	E.V.F. C.B.A.		(RTL)
BL881	VLL0203	FLUORESCENT LAMP	1	
C801	ECUM1A335KB	C.CAPACITOR CH 10V 3.3U	1	
C802	ECGC1BB150	E.CAPACITOR CH 12.5V 15U	1	
C827	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C829	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C830	ECUX1H470JCV	C.CAPACITOR CH 50V 47P	1	
C832	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C833	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C834-37	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	4	
C838,39	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	2	
C865,66	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	2	
D801	MA338	DIODE	1	
D803	1SS355	DIODE	1	
FP802	VJS3319B016	CONNECTOR (FEMALE) 16P	1	
IC802	ET2070F0G	IC	1	
IC805	TA75S558F	IC	1	
L801	VLQ0426J6R8	COIL 6.8UH	1	
L803-05	VLQ0807K100	COIL 10UH	3	
L881	VLQ0779K100	COIL 10UH	1	
Q881	2SK1299-3S	TRANSISTOR	1	
R802	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R805	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R807,08	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	2	
R832	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R834	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R835	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R836	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R841	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R849	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R850	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R851	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R852	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R878	ERJ2RHD223	M.RESISTOR CH 1/16W 22K	1	
R879	ERJ2RHD183	M.RESISTOR CH 1/16W 18K	1	
R880	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R881	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
T881	ETJ09K31AM	TRANSFORMER	1	
		MISCELLANEOUS		
	VMZ2774	EVF BARRIER (A)	1	
	VMZ2775	EVF BARRIER (B)	1	
■	VEP01817D	POWER C.B.A.		(RTL)
C1001-04	ECUM1C106VB	C.CAPACITOR CH 16V 10U	4	
C1005	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C1011	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C1012	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C1013	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C1014	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1015	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C1016	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1018,19	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	2	
C1021	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C1022	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C1023	ECUX1E331KBQ	C.CAPACITOR CH 25V 330P	1	
C1024	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1025	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C1026-29	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	4	
C1031	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C1032	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C1033	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C1034	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C1035	ECST0JX476Z	T.CAPACITOR CH 6.3V 47U	1	
C1036	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1037	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C1041	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C1042	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	1	
C1044	ECUX1C223KBQ	C.CAPACITOR CH 16V 0.022U	1	
C1045	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C1046	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1052	ECUM1E105KBM	C.CAPACITOR CH 25V 1U	1	
C1053	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C1055	ECUM1C225KBM	C.CAPACITOR CH 16V 2.2U	1	
C1056,57	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	2	
C1063,64	ECUM1A225KBM	C.CAPACITOR CH 10V 2.2U	2	
C1065,66	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	2	
C1081	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1082	ECUM1E105KBM	C.CAPACITOR CH 25V 1U	1	
C1083	ECUX1E222KBQ	C.CAPACITOR CH 25V 2200P	1	
C1085	ECUM1C106VB	C.CAPACITOR CH 16V 10U	1	
C1086,87	ECUM1E105KBM	C.CAPACITOR CH 25V 1U	2	
C1101	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
C1102	ECUM1C334KBN	C.CAPACITOR CH 16V 0.33U	1	
C1103	ECUX1A473KBQ	C.CAPACITOR CH 10V 0.047U	1	
C1104	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1105	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1106	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C1107	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1111	ECUX1H102KBV	C.CAPACITOR CH 50V 1000P	1	
C1112	ECUX1E471KBQ	C.CAPACITOR CH 25V 470P	1	
C1113	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1114	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1117	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1118	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C1119	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C1121	ECUX1H472KBV	C.CAPACITOR CH 50V 4700P	1	
C1122	ECUX1E471KBQ	C.CAPACITOR CH 25V 470P	1	
C1123	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1124	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1127-29	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	3	
C1131	ECUX1H822KBV	C.CAPACITOR CH 50V 8200P	1	
C1132	ECUX1C822KBQ	C.CAPACITOR CH 16V 8200P	1	
C1133	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1134	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1141,42	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	2	
C1143	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C1144	ECUX1H390JCQ	C.CAPACITOR CH 50V 39P	1	
C1151	ECUX1H471JCV	C.CAPACITOR CH 50V 470P	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C1152	ECUX1E471KBQ	C. CAPACITOR CH 25V 470P	1	
C1153	ECUX1H151JCQ	C. CAPACITOR CH 50V 150P	1	
C1154	ECUX1H820JCQ	C. CAPACITOR CH 50V 82P	1	
C1155	ECUM0J225KBN	C. CAPACITOR CH 6.3V 2.2U	1	
C1181	ECUX1H822KBV	C. CAPACITOR CH 50V 8200P	1	
C1182	ECUX1E471KBQ	C. CAPACITOR CH 25V 470P	1	
C1183	ECUX1H151JCQ	C. CAPACITOR CH 50V 150P	1	
C1184	ECUX1H820JCQ	C. CAPACITOR CH 50V 82P	1	
C1185	ECUM0J225KBN	C. CAPACITOR CH 6.3V 2.2U	1	
D1051,52	MA729	DIODE	2	
D1081,82	MA729	DIODE	2	
D1101	MA8120-L	DIODE	1	
D1103	1SS355	DIODE	1	
D1151	MA8160-M	DIODE	1	
D1152	1SS355	DIODE	1	
FP1002	VJS4018B010	CONNECTOR (FEMALE) 10P	1	
IC1001	BA9734AKV	IC	1	
IC1002	TA75S393F	IC	1	
IC1031	RN5RG30AA	IC	1	
⚠ IP1001	VSF0233F31	FUSE	1	
JK1001	VEK8300	BATTERY JACK	1	
L1001	VLQ0827M3R9	COIL 3.9UH	1	
L1011	VLQ0827M680	COIL 68UH	1	
L1012	VLQ0810M4R7	COIL 4.7UH	1	
L1014-16	VLQ0779K100	COIL 10UH	3	
L1017	VLQ0780K100	COIL 10UH	1	
L1021	VLQ0827M150	COIL 15UH	1	
L1022	VLQ0810M4R7	COIL 4.7UH	1	
L1023	VLQ0779M4R7	COIL 4.7UH	1	
L1024,25	VLQ0780K100	COIL 10UH	2	
L1026,27	VLQ0779K100	COIL 10UH	2	
L1029	VLQ0779K100	COIL 10UH	1	
L1031	VLQ0827M220	COIL 22UH	1	
L1032	VLQ0810M4R7	COIL 4.7UH	1	
L1041	VLQ0827M220	COIL 22UH	1	
L1042	VLQ0810M4R7	COIL 4.7UH	1	
L1051	VLQ0779K331	COIL 330UH	1	
L1052	VLQ0780K100	COIL 10UH	1	
L1061	VLQ0827M330	COIL 33UH	1	
L1062	VLQ0827M820	COIL 82UH	1	
L1081	VLQ0779K331	COIL 330UH	1	
L1082	VLQ0780K100	COIL 10UH	1	
PS1001	VJS4029A080	CONNECTOR (FEMALE) 80P	1	
PS1002	VJS4009A030	CONNECTOR (FEMALE) 30P	1	
Q1011	FP102	TRANSISTOR	1	
Q1021	FP102	TRANSISTOR	1	
Q1022	2SK2151	TRANSISTOR	1	
Q1031	FP102	TRANSISTOR	1	
Q1032	2SB970X	TRANSISTOR	1	
Q1041	FP102	TRANSISTOR	1	
Q1042	2SK2151	TRANSISTOR	1	
Q1051	2SB798	TRANSISTOR	1	
Q1061,62	FP102	TRANSISTOR	2	
Q1081	2SB798	TRANSISTOR	1	
Q1083	2SD2216	TRANSISTOR	1	
Q1084	XP1401	TRANSISTOR	1	
Q1101	2SB1462-R	TRANSISTOR	1	
QR1001	MRN2102	TRANSISTOR-RESISTOR	1	
QR1002	UN921F	TRANSISTOR-RESISTOR	1	
QR1004	MRN2111	TRANSISTOR-RESISTOR	1	
QR1051	MRN1104	TRANSISTOR-RESISTOR	1	
QR1101	UN9214	TRANSISTOR-RESISTOR	1	
R1001	ERJ2GE0R00	M. RESISTOR CH 1/16W 0	1	
R1003	ERJ2GEJ225	M. RESISTOR CH 1/16W 2.2M	1	
R1005	ERJ2GEJ103	M. RESISTOR CH 1/16W 10K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R1006,07	ERJ8GEY0R00	M. RESISTOR CH 1/8W 0	2	
R1008	ERJ2GEJ473	M. RESISTOR CH 1/16W 47K	1	
R1009	ERJ8GEY0R00	M. RESISTOR CH 1/8W 0	1	
R1010	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1011	ERJ6RBB682	M. RESISTOR CH 1/10W 6.8K	1	
R1012	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1013	ERJ3RBD391	M. RESISTOR CH 1/16W 390	1	
R1014	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1015	ERJ2GEJ331	M. RESISTOR CH 1/16W 330	1	
R1020	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1021	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1022	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1023	ERJ3RBD361	M. RESISTOR CH 1/16W 360	1	
R1024	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1025	ERJ2GEJ331	M. RESISTOR CH 1/16W 330	1	
R1030	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1031	ERJ6RBB562	M. RESISTOR CH 1/10W 5.6K	1	
R1032	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1033	ERJ3RBD511	M. RESISTOR CH 1/16W 510	1	
R1034	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1035	ERJ2GEJ331	M. RESISTOR CH 1/16W 330	1	
R1036	ERJ2GEJ102	M. RESISTOR CH 1/16W 1K	1	
R1037	ERJ2GEJ103	M. RESISTOR CH 1/16W 10K	1	
R1038	ERJ3GEY0R00	M. RESISTOR CH 1/16W 0	1	
R1040	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1041	ERJ6RBB152	M. RESISTOR CH 1/10W 1.5K	1	
R1042	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1043	ERJ3RBD511	M. RESISTOR CH 1/16W 510	1	
R1044	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1045	ERJ2GEJ331	M. RESISTOR CH 1/16W 330	1	
R1050	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1051	ERJ6RBB273	M. RESISTOR CH 1/10W 27K	1	
R1052	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1053	ERJ3RBD301	M. RESISTOR CH 1/16W 300	1	
R1054	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1056	ERJ2GEJ470	M. RESISTOR CH 1/16W 47	1	
R1080	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1081	ERJ6RBB273	M. RESISTOR CH 1/10W 27K	1	
R1082	ERJ2RKD820	M. RESISTOR CH 1/16W 82	1	
R1083	ERJ3RBD271	M. RESISTOR CH 1/16W 270	1	
R1084	ERJ6RBB272	M. RESISTOR CH 1/10W 2.7K	1	
R1086	ERJ2GEJ470	M. RESISTOR CH 1/16W 47	1	
R1087	ERJ2RHD223	M. RESISTOR CH 1/16W 22K	1	
R1088	ERJ2RHD332	M. RESISTOR CH 1/16W 3.3K	1	
R1089	ERJ2RHD272	M. RESISTOR CH 1/16W 2.7K	1	
R1101	ERJ3RBD223	M. RESISTOR CH 1/16W 22K	1	
R1102	ERJ6GEYF472	M. RESISTOR CH 1/10W 4.7K	1	
R1103	ERJ2GEJ472	M. RESISTOR CH 1/16W 4.7K	1	
R1104	ERJ2GEJ123	M. RESISTOR CH 1/16W 12K	1	
R1107	ERJ2GEJ225	M. RESISTOR CH 1/16W 2.2M	1	
R1108	ERJ2GEJ473	M. RESISTOR CH 1/16W 47K	1	
R1109	ERJ2GEJ103	M. RESISTOR CH 1/16W 10K	1	
R1111	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1112	ERJ2GEJ822	M. RESISTOR CH 1/16W 8.2K	1	
R1121	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1122	ERJ2GEJ682	M. RESISTOR CH 1/16W 6.8K	1	
R1131	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1132	ERJ2GEJ682	M. RESISTOR CH 1/16W 6.8K	1	
R1141	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1142	ERJ2GEJ103	M. RESISTOR CH 1/16W 10K	1	
R1151	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1152	ERJ2GEJ822	M. RESISTOR CH 1/16W 8.2K	1	
R1153	ERJ2RHD123	M. RESISTOR CH 1/16W 12K	1	
R1154	ERJ2RHD473	M. RESISTOR CH 1/16W 47K	1	
R1155	ERJ2GEJ103	M. RESISTOR CH 1/16W 10K	1	
R1158	ERJ2GE0R00	M. RESISTOR CH 1/16W 0	1	
R1159	ERJ2GEJ472	M. RESISTOR CH 1/16W 4.7K	1	
R1181	ERJ2GEJ151	M. RESISTOR CH 1/16W 150	1	
R1182	ERJ2GEJ822	M. RESISTOR CH 1/16W 8.2K	1	
R1183	ERJ2RHD123	M. RESISTOR CH 1/16W 12K	1	
R1184	ERJ2RHD473	M. RESISTOR CH 1/16W 47K	1	
R1186	ERJ2GEJ332	M. RESISTOR CH 1/16W 3.3K	1	
R1187	ERJ2GEJ272	M. RESISTOR CH 1/16W 2.7K	1	
T1051	VTP0520	TRANSFORMER	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
T1081	VTP0515	DC/DC TRANSFORMER	1	
		MISCELLANEOUS		
	VMZ2795	BARRIER	1	
■	VEP22282A	GDS/AGC C.B.A.		(RTL)
C251-54	EEJK0JS106	E.CAPACITOR 6.3V 10U	4	
C255	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C257	ECUX1C104ZFQ	C.CAPACITOR CH 16V 0.1U	1	
C258	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C259	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
C260	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C261	ECUX1H150JCQ	C.CAPACITOR CH 50V 15P	1	
C264	ECUX1H330JCQ	C.CAPACITOR CH 50V 33P	1	
C265	EEJK0JS106	E.CAPACITOR 6.3V 10U	1	
C266	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C293,94	ECUX1C473KBV	C.CAPACITOR CH 16V 0.047U	2	
C295	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
D291	MA143	DIODE	1	
FL251	VLF1438	FILTER	1	
FL252	VLF1388	FILTER	1	
IC251	AN2108NFHQ	IC	1	
L251	VLQ0779K100	COIL 10UH	1	
L252	VLQ0426J270	COIL 27UH	1	
L253	VLQ0808J6R8	COIL 6.8UH	1	
PS202	VJS4009A040	CONNECTOR (FEMALE) 40P	1	
Q251	XP4601	TRANSISTOR	1	
Q252	2SD2216	TRANSISTOR	1	
Q291	2SC4626	TRANSISTOR	1	
R251	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R252	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R255	ERJ2GEJ561	M.RESISTOR CH 1/16W 560	1	
R256	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
R257	ERJ2GEJ222	M.RESISTOR CH 1/16W 2.2K	1	
R258	ERJ2GEJ331	M.RESISTOR CH 1/16W 330	1	
R260	ERJ2GEJ561	M.RESISTOR CH 1/16W 560	1	
R261	ERJ2GEJ153	M.RESISTOR CH 1/16W 15K	1	
R262	ERJ2GEJ183	M.RESISTOR CH 1/16W 18K	1	
R263	ERJ2GEJ823	M.RESISTOR CH 1/16W 82K	1	
R264	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R265	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R292	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
		MISCELLANEOUS		
	VMZ2810	FLEX. BARRIER	1	
	VSC4751	SHIELD COVER (BOTTOM)	1	
■	VEK8412	LENS FLEX.CARD		(RTL)
		MISCELLANEOUS		
	CNA1312K01VT	PHOTO SENSOR	1	
	VEK8229	MR HOLDER U.	1	
	VJB20751	FLEX. CARD	1	
■	VEP26207B	MONITOR C.B.A.		(RTL)
C901-03	ECUX1E471KBQ	C.CAPACITOR CH 25V 470P	3	
C904-06	ECUM1A335KBM	C.CAPACITOR CH 10V 3.3U	3	
C907	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C908	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C909	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C910	ECUX1C103KBQ	C.CAPACITOR CH 16V 0.01U	1	
C911	ECUM1C106VB	C.CAPACITOR CH 16V 10U	1	
C912	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C913	ECUX1H121JCQ	C.CAPACITOR CH 50V 120P	1	
C914	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C915	ECST1CY225Z	T.CAPACITOR CH 16V 2.2U	1	
C916,17	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	2	
C919	ECUM1C105KBM	C.CAPACITOR CH 16V 1U	1	
C921	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C922	ECUM1A105KBN	C.CAPACITOR CH 10V 1U	1	
C926	ECUX1A104KBQ	C.CAPACITOR CH 10V 0.1U	1	
C927,28	ECUM1C225KB	C.CAPACITOR CH 16V 2.2U	2	
C929	ECUX1H151JCQ	C.CAPACITOR CH 50V 150P	1	
C930	ECUX1E102KBQ	C.CAPACITOR CH 25V 1000P	1	
C931	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
C932,33	ECUM1C106VB	C.CAPACITOR CH 16V 10U	2	
C938	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C939	ECUX1H101JCQ	C.CAPACITOR CH 50V 100P	1	
D901	MA338	DIODE	1	
D902	MA132WK	DIODE	1	
FP901	VJS3319B024	CONNECTOR (FEMALE) 24P	1	
FP902	VJS4036B008	CONNECTOR (FEMALE) 8P	1	
FP903,04	VJS3971B017	CONNECTOR (FEMALE) 17P	2	
FP905	VJS4036B008	CONNECTOR (FEMALE) 8P	1	
IC901	UPD65622GY85	IC	1	
IC902	TC4W53FU	IC	1	
IC903-05	TA75S558F	IC	3	
IC906	TC7ST04FU	IC	1	
IC907	NJM78L12UA	IC	1	
IC908	TC7S14FU	IC	1	
IC910,11	TC7S14FU	IC	2	
L901,02	VLQ0807K220	COIL 22UH	2	
L903	VLQ0163J2R7	COIL 2.7UH	1	
L904	VLQ0807K220	COIL 22UH	1	
L905,06	VLQ0807K100	COIL 10UH	2	
L907	VLQ0807K220	COIL 22UH	1	
Q901	XP1501	TRANSISTOR-RESISTOR	1	
Q902	2SD2216	TRANSISTOR	1	
Q903-08	XP4601	TRANSISTOR	6	
Q909,10	2SD2216	TRANSISTOR	2	
QR901	XP4213	TRANSISTOR-RESISTOR	1	
QR902	MRN1104	TRANSISTOR-RESISTOR	1	
QR903	XP4312	TRANSISTOR-RESISTOR	1	
QR904	MRN2104	TRANSISTOR-RESISTOR	1	
QR905	XP4312	TRANSISTOR-RESISTOR	1	
R901-03	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	3	
R904	ERJ2GE0R00	M.RESISTOR CH 1/16W 0	1	
R905	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R906-11	ERJ2GEJ393	M.RESISTOR CH 1/16W 39K	6	
R912-14	ERJ2RHD104	M.RESISTOR CH 1/16W 100K	3	
R915-17	ERJ2RHD273	M.RESISTOR CH 1/16W 27K	3	
R918-20	ERJ2RHD152	M.RESISTOR CH 1/16W 1.5K	3	
R921-23	ERJ2RHD472	M.RESISTOR CH 1/16W 4.7K	3	
R924	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R925	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R926	ERJ2GEJ101	M.RESISTOR CH 1/16W 100	1	
R927	ERJ2GEJ474	M.RESISTOR CH 1/16W 470K	1	
R928	ERJ2GEJ332	M.RESISTOR CH 1/16W 3.3K	1	
R929	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R930	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R931	ERJ2GEJ471	M.RESISTOR CH 1/16W 470	1	
R932	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R933	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R934	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R935	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R936	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R937	ERJ2GEJ563	M.RESISTOR CH 1/16W 56K	1	
R938	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
R939	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R940	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R941	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R942-44	ERJ2GER00	M.RESISTOR CH 1/16W 0	3	
R945	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R946	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R947	ERJ2GEJ184	M.RESISTOR CH 1/16W 180K	1	
R948	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R949	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R950	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R951	ERJ2GEJ223	M.RESISTOR CH 1/16W 22K	1	
R952	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R953	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R954,55	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	2	
R956	ERJ2GEJ682	M.RESISTOR CH 1/16W 6.8K	1	
R957,58	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	2	
R962	ERJ2GEJ103	M.RESISTOR CH 1/16W 10K	1	
R963,64	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	2	
R967	ERJ2GEJ562	M.RESISTOR CH 1/16W 5.6K	1	
R968	ERJ2RHD273	M.RESISTOR CH 1/16W 27K	1	
R969	ERJ2GEJ102	M.RESISTOR CH 1/16W 1K	1	
■	VEP06C44A	SENSOR FLEX.CARD		(RTL)
IC991,92	DN8797MS	HALL IC	2	
■	VEP06C42A	S/S POWER FLEX.CARD C.B.A.		(RTL)
B6101	VL1220/1FC	BATTERY	1	
D6101	GL150UR	DIODE	1	
R6101	ERJ8GEYJ561	M.RESISTOR CH 1/8W 560	1	
S6101	VSS0549	SWITCH	1	
S6103	VSP0584	SWITCH	1	
■	VEP00Z38B	MULTI JACK C.B.A.		(RTL)
PS3002	VJS4009A030	CONNECTOR (FEMALE) 30P	1	
PS3003	VJS4024	MULTI JACK	1	
		MISCELLANEOUS		
	VMZ2795	BARRIER	1	
■	VEK8359	MIC UNIT		(RTL)
C451	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C452	ECUX1H101JCV	C.CAPACITOR CH 50V 100P	1	
C453	ECST0JX476Z	T.CAPACITOR CH 6.3V 47U	1	
C454	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C455	ECST0JX476Z	T.CAPACITOR CH 6.3V 47U	1	
C4801	ECUX1C223KBV	C.CAPACITOR CH 16V 0.022U	1	
C4802	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	1	
C4804	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C4805	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
C4806,07	ECUX1C333KBV	C.CAPACITOR CH 16V 0.033U	2	
C4808	ECUX1H151JCV	C.CAPACITOR CH 50V 150P	1	
C4809	ECUX1A224KBV	C.CAPACITOR CH 10V 0.22U	1	
C4814	ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C4816	ECUX1H682KBV	C.CAPACITOR CH 50V 6800P	1	
C4817	ECST0JX226Z	T.CAPACITOR CH 6.3V 22U	1	
C4830	ECST0JX226Z	T.CAPACITOR CH 6.3V 22U	1	
C4903	ECUX1C473KBV	C.CAPACITOR CH 16V 0.047U	1	
C4908	ECUX1C473KBV	C.CAPACITOR CH 16V 0.047U	1	
C4914	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C4916	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
C6401	ECUX1C104KBV	C.CAPACITOR CH 16V 0.1U	1	
C6402	ECST0JY106Z	T.CAPACITOR CH 6.3V 10U	1	
D6801	GL150UR	DIODE	1	
D6802	PH310	DIODE	1	
FP4801	VJS3971B017	CONNECTOR (FEMALE) 17P	1	
IC457	TA75S393F	IC	1	
IC4801	NJM2112V	IC	1	
IR6401	VEK8283	IR RECEIVER UNIT	1	
L451	VLQ0807K100	COIL 10UH	1	
Q451	2SD1030	TRANSISTOR	1	
Q4805	2SD2216	TRANSISTOR	1	
Q4810,11	2SD2216	TRANSISTOR	2	
Q4902	2SD2216	TRANSISTOR	1	
Q4904	2SD2216	TRANSISTOR	1	
QR4903,04	MRN1103	TRANSISTOR-RESISTOR	2	
R451	ERJ3GEYJ335	M.RESISTOR CH 1/16W 3.3M	1	
R452	ERJ3GEYJ563	M.RESISTOR CH 1/16W 56K	1	
R453	ERJ3RBD113	M.RESISTOR CH 1/16W 11K	1	
R454	ERJ3RBD183	M.RESISTOR CH 1/16W 18K	1	
R4801-03	ERJ6GEYG392	M.RESISTOR CH 1/10W 3.9K	3	
R4805	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4806	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R4807	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4808	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R4809-12	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	4	
R4814	ERJ3GEYJ124	M.RESISTOR CH 1/16W 120K	1	
R4815,16	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	2	
R4818	ERJ3GEYJ153	M.RESISTOR CH 1/16W 15K	1	
R4823	ERJ3GEYJ223	M.RESISTOR CH 1/16W 22K	1	
R4824	ERJ3GEYJ333	M.RESISTOR CH 1/16W 33K	1	
R4839	ERJ3GEYG472	M.RESISTOR CH 1/16W 4.7K	1	
R4861	ERJ3GEYG472	M.RESISTOR CH 1/16W 4.7K	1	
R4864	ERJ3GEYG472	M.RESISTOR CH 1/16W 4.7K	1	
R4906	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4908	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R4910	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4913	ERJ2GEJ333	M.RESISTOR CH 1/16W 33K	1	
R4915	ERJ2GEJ473	M.RESISTOR CH 1/16W 47K	1	
R4917	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4924	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4928	ERJ2GEJ472	M.RESISTOR CH 1/16W 4.7K	1	
R4934	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R4938	ERJ2GEJ104	M.RESISTOR CH 1/16W 100K	1	
R6803	ERJ6GEYG181	M.RESISTOR CH 1/10W 180	1	
S6901	VSP0584	SWITCH	1	

Memo

INTERNAL REFERENCE CODES NOTE: This chart is only for internal reference. Do not order any parts according to these codes.	
P.B.C.	FILM CODE
CAMERA	HOKU00-00Z70
POWER	HOKU03-01817
EVF	HOKU00-28252
MONITOR	HOKU00-26207
MIC UNIT	HOKU00-04699
HEAD AMP	HOKU00-05365
CDS/AGC	HOKU00-22282

Panasonic

MATSUSHITA ELECTRIC

Printed in Japan

Service Manual

ORDER NO. VMD0109026C8

Service Manual

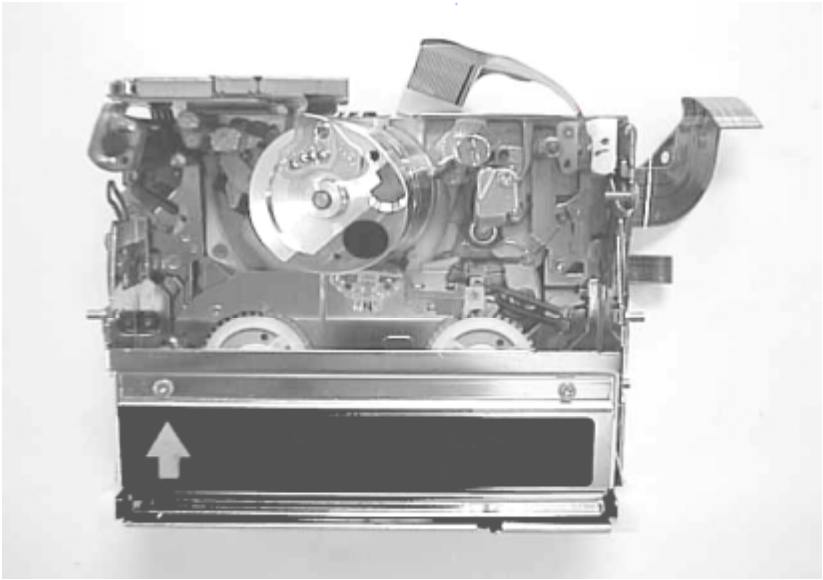
Digital Video Camera/Recorder

Panasonic Mini DV

- Q-MECHANISM

(Including Q1, Q2&Q3)

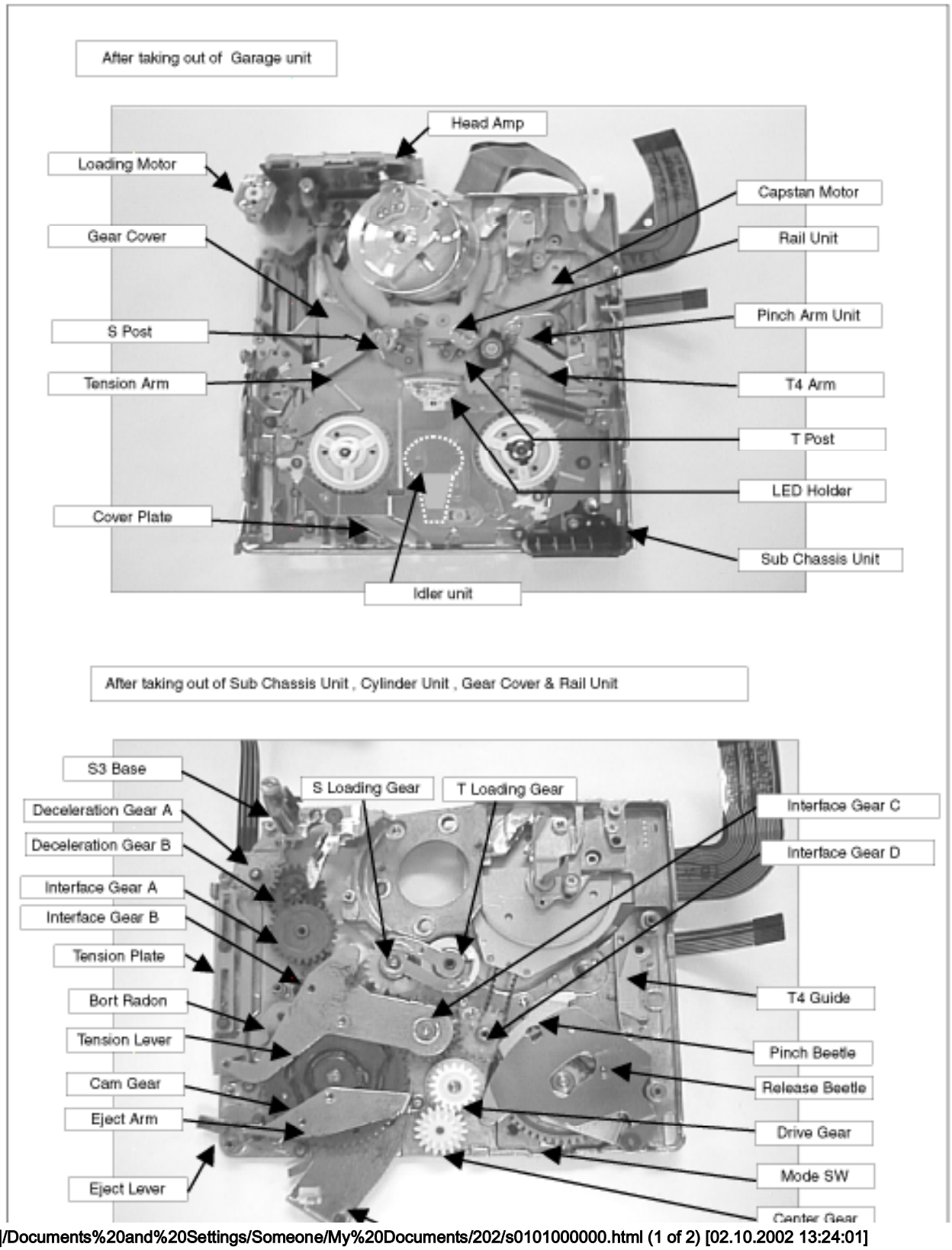
Disassembly/Assembly Procedures
Adjustment Procedures



Panasonic

1.1 UPPER SIDE

TOP PREVIOUS NEXT



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1.2 BOTTOM SIDE

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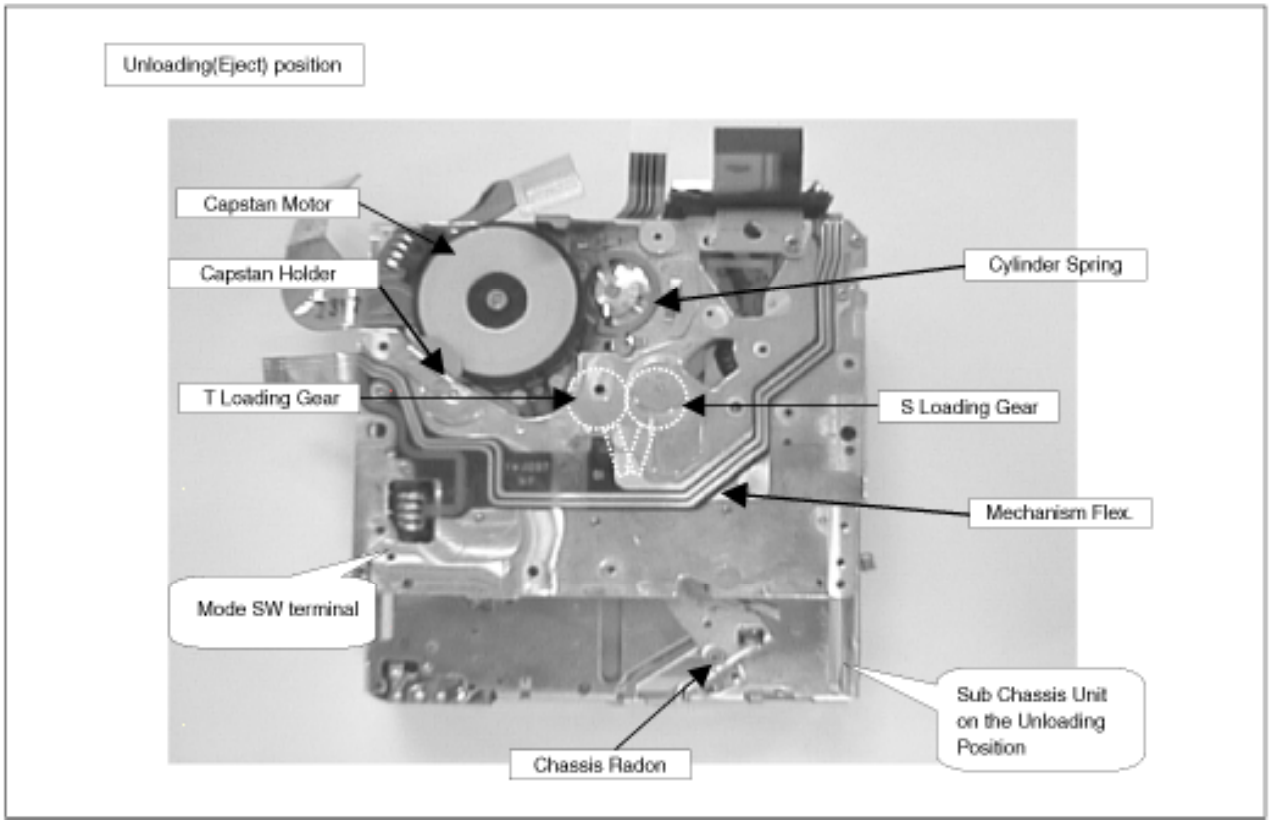

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1.3 SENSOR POSITION

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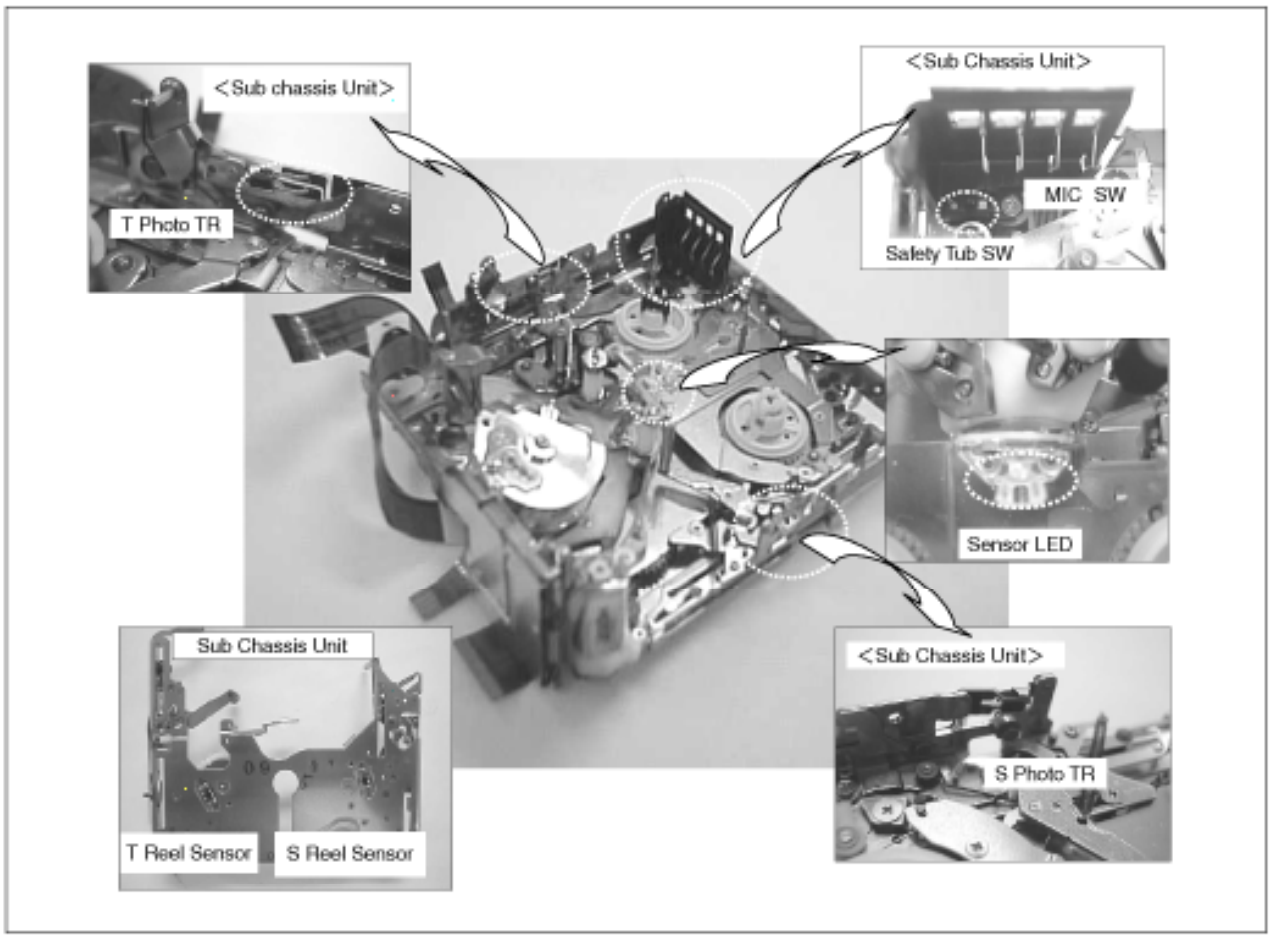
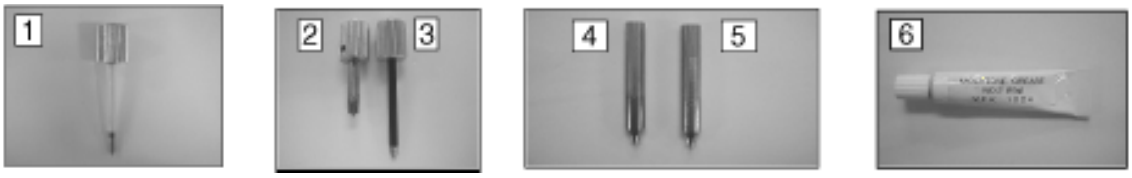


TOP PREVIOUS NEXT

2.1 FIXTURES& TOOLS FOR DISASSEMBLY& ASSEMBLY

TOP PREVIOUS NEXT

No.	Parts number	Parts Name	Q´ty	New	Remarks
1	VFK1390	Precision Driver	1	•	
2	VFK1444	Gear Driver	1	•	
3	VFK1444Q2	Gear Driver for Q2 & Q3mecha.	1	•	
4	VFK1650	Cut Washer Jig(0.86)	1	•	
5	VFK1649	Cut Washer Jig(0.65)	1	•	
6	VFK1024	Molytone Grease	1	•	

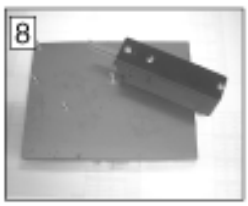


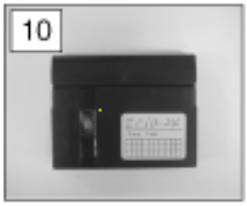
TOP PREVIOUS NEXT

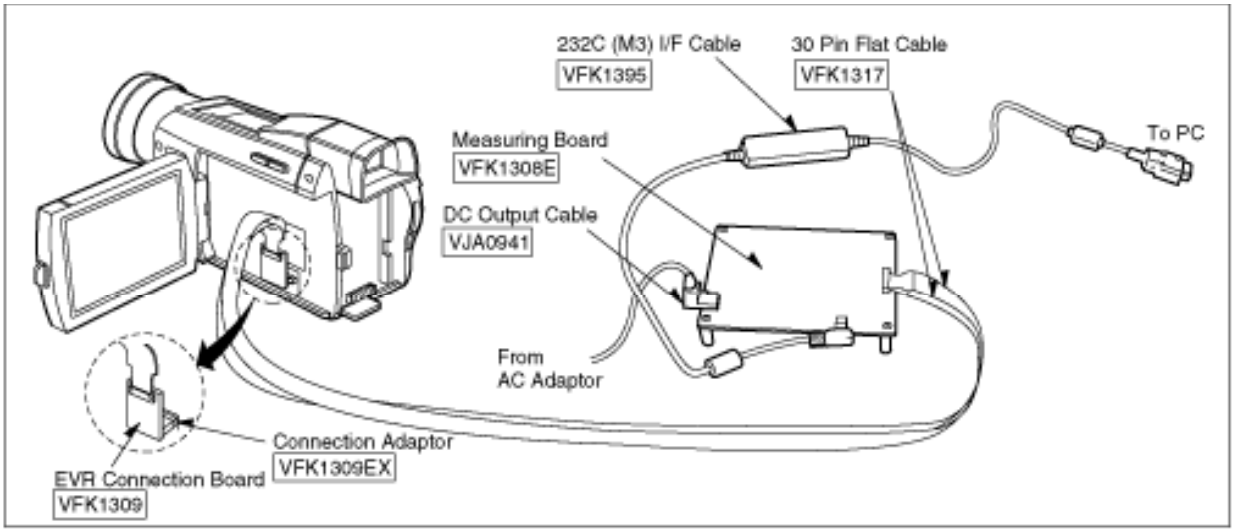
2.2 FIXTURES&TOOLS FOR MECHANICAL ADJUSTMENT

TOP PREVIOUS NEXT

No.	Parts number	Parts Name	Q´ty	New	Remarks
7	VFK1278	Post Adjustment Driver	1	•	
8	VFK1638	Capstan Tilt Adj. Jig	1	•	
9	VFK1641	Envelope Detecor Board	1	•	
10	VFM3110EDS(PAL)	DV Alignment Tape	1	--	or VFM3010EDS(NTSC)
11	VFK1395	232C(M3) I/F Cable	1	--	"TATSUJIN" system
12	VFK1308E	Measuring Board	1	--	"TATSUJIN" system
13	VFK1309	EVR Connecor Board	1	--	"TATSUJIN" system
14	VFK1309EX	Connection Adaptor		--	"TATSUJIN" system
15	VFK1317	30pin Flat Cable	2	--	or VFK1517(New - 300mm) "TATSUJIN" system
16	VJA0941	DC Output Cable	1	--	"TATSUJIN" system







2.3 MAINTENANCE FOR CAPSTAN TILT ADJUSTMENT JIG.

TOP PREVIOUS NEXT

1. Keep applying oil for preventive oxidation on base block.

   Glove should be used when you apply oil.

2. Do not apply pressure to this jig.

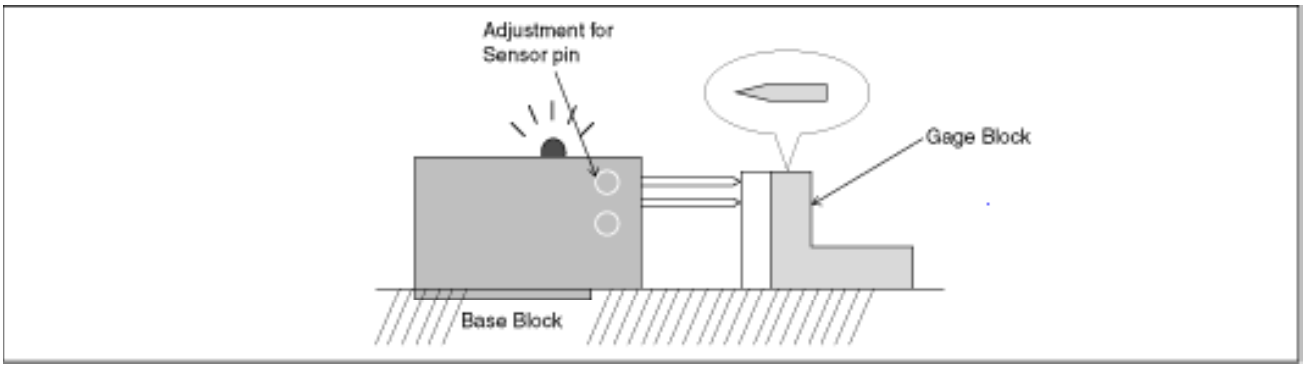
3. If Brightness of LED become weak, Battery (SUM4 X 2) in the top of box should be changed.

4. Inspect sensor pin regularly as following.

   A. Put Gage Block to sensor pin.

   B. Confirm LED is lit.

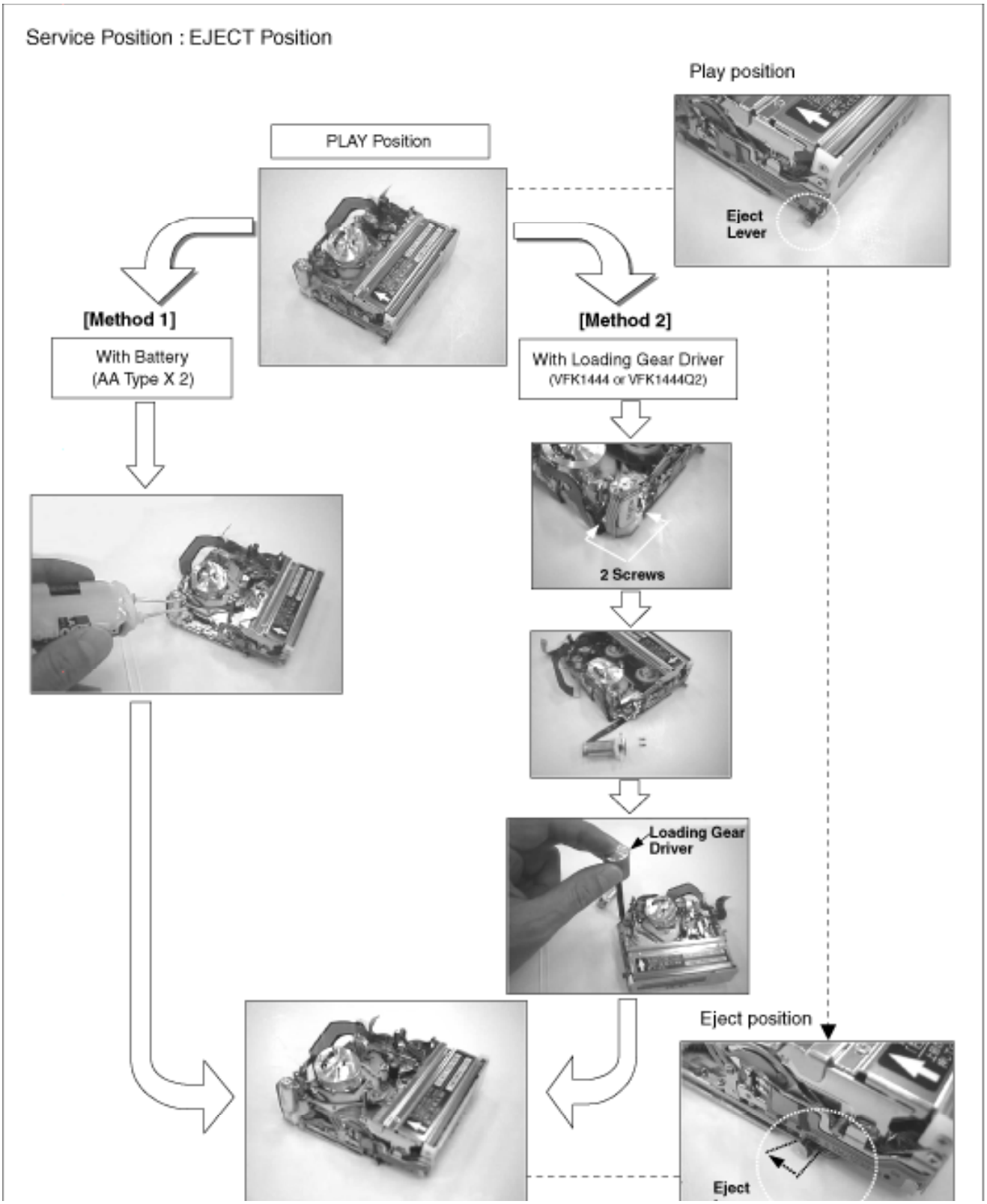
      If not, adjust sensor pin by rotating a screw.

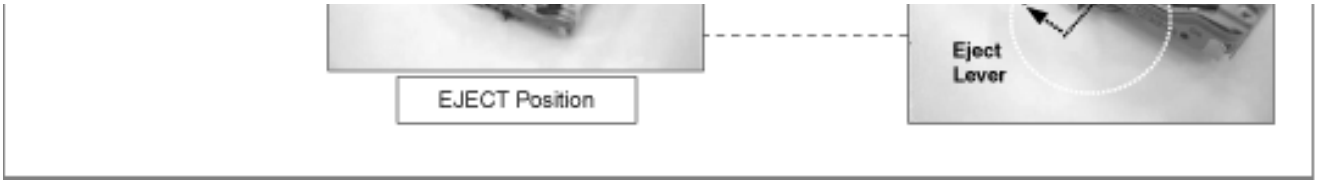


TOP PREVIOUS NEXT

3.1 PREPARATION FOR DISASSEMBLY

TOP PREVIOUS NEXT





TOP PREVIOUS NEXT

3.2 DISASSEMBLY PROCEDURE

TOP PREVIOUS NEXT

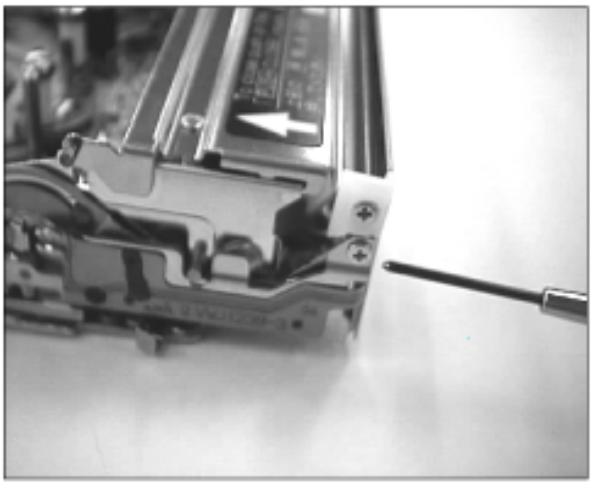
No.	Item	Fig.	Procedure
1	Cassette Up Unit.	Fig. D1-1	1) Remove 3 screws. (Q1 &2 have 4 screws)
		Fig. D1-2	2) Take coupling portion off from both S &T sides.
*2	H Amp Unit./(Only Q1 & Q2)	Fig. D2-1	1) Remove a screw from Shield case.
		Fig. D2-2	2) Take Cylinder Flex. From connector.
		Fig. D2-3	3) Remove a screw from H Amp Angle.
3	Cylinder Unit & RT Flex. Flame.	Fig. D3-1	1) Remove a screw from RT Flex. Flame.
		Fig. D3-2	2) Remove 3 screws and then take Cylinder Spring out.
		Fig. D3-3	3) Remove a screw and take RT Flex. Flame out.
4	LED Holder, Cover plate & Idler U.	Fig. D4-1	1) Pull up and remove LED Holder.
		Fig. D4-2	2) Move LED Flat Cable out of position and unhook 2 springs.
		Fig. D4-3	3) Remove 5 screws and remove Cover Plate & Idler U.
5	Sub Chassis Unit	Fig. D5-1	1) Remove 4 screws.
		Fig. D5-2	2) Remove a screw and unhook a spring from Pinch Arm.
6	Pinch Arm & Center Gear	Fig. D6-1	1) Remove Cut Washer and take Pinch Arm out. 2) Take Center Gear out.
		Fig. D6-2	3) Take Center Gear Spacer out.
7	Rail Unit	Fig. D7-1	1) Make half loading until / Connection Arm comes out.
		Fig. D7-2	2) Disconnect Connection Arms. a) Hold Loading Gear side. b) Disconnect connection arms.
		Fig. D7-3	3) Remove 4 screws.
8	T-Loading Gear & S-Loading Gear	Fig. D8	1) Take T-Loading Gear out. 2) Remove Cut Washer on S-Loading Gear and take S-Loading Gear out. * Removed Cut Washer can not be used again.
9	Gear Cover	Fig. D9	1) Remove a screw and slide Gear Cover to take out.
10	Pinch Beetle & Release Beetle	Fig. D10	1) Remove a washer and take Pinch Beetle and Release Beetle out together.
11	Tension Lever & Eject Arm.	Fig. D11	1) Remove a screw and take Tension Lever out. 2) Remove a washer and take Eject Arm out.
12	Interface Gears	Fig. D12	1) Remove 4 Gears.
13	Cam Gear	Fig. D13	1) Remove Cam Gear.

14	Chassis Radon	Fig. D14	1) Remove a washer.
15	Boat Radon	Fig. D15	1) Remove Boat radon.
16	Drive Gear	Fig. D16	1) Remove Drive Gear and a White Waher underneath.
17	Capstan Holder & Capstan Motor	Fig. D17-1	1) Remove 2 screws and take Capstan Holder out. * It is not necessary to remove 2 screws for New Capstan Holder. Because it shapes screw.
		Fig. D17-2	2) Remove 3 screws and take Capstan Motor out downword.
18	Loading Motor unit & Mechanism Interface Flex.	Fig. D18-1	1) Remove 2 screws and take Loading Motor Unit out.
		Fig. D18-2	2) Remove 4 screws and dissolder at Mode Sw.
*19	Mode Switch , Deceleration Gears & Tension Plate.	Fig. D19	1) Take Mode Sw out. 2) Remove a washer and take Deceleration Gear (A) out. 3) Take Deceleration Gear (B) out. 4) Remove 2 washers and take Tension Plate.
*20	T4 Guide , Eject Lever , Pulley Cover & Pulley.	Fig. D20-1	1) Remove a screw and take T4 Guide out.
		Fig. D20-2	2) Remove a washer and take Eject Lever out.
		Fig. D20-3	3) Remove 2 screw and take Pulley Cover out. 4) Take Pulley out.
*21	S3 Base U.	Fig. D21	1) Remove a screw for S3 adjustment and take S3 Base U.

* 1) Procedure 2 for H.Amp Unit is applied only Q1 & Q2 / mechanism. 2) Procedure 19 - 21 can be changed in order.

Fig. D1-1

1/3 (Left)
* Lower one



2/3 (Front)
* Q1 & Q2 : 2screws

3/3 (Right)
* Lower one

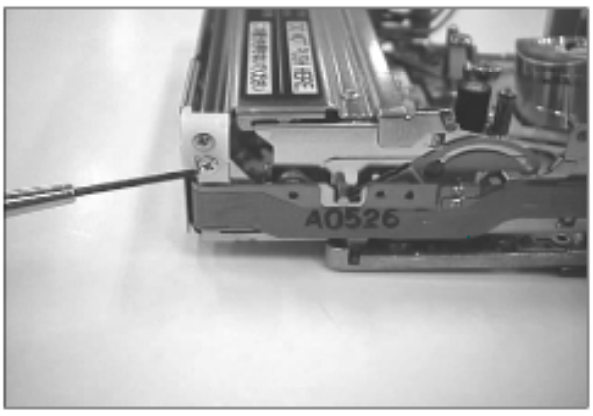


Fig. D1-2

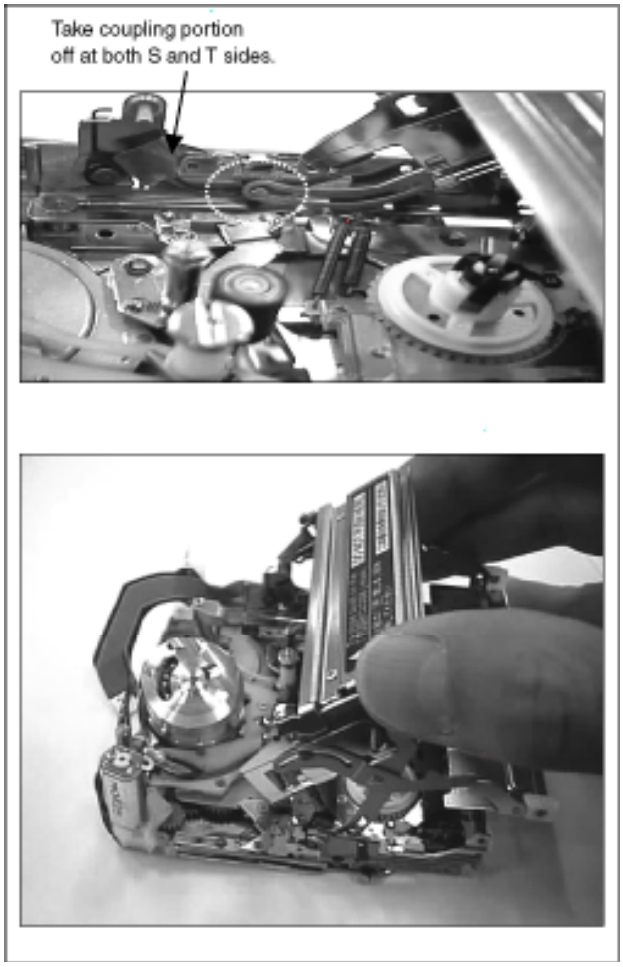


Fig. D2-1

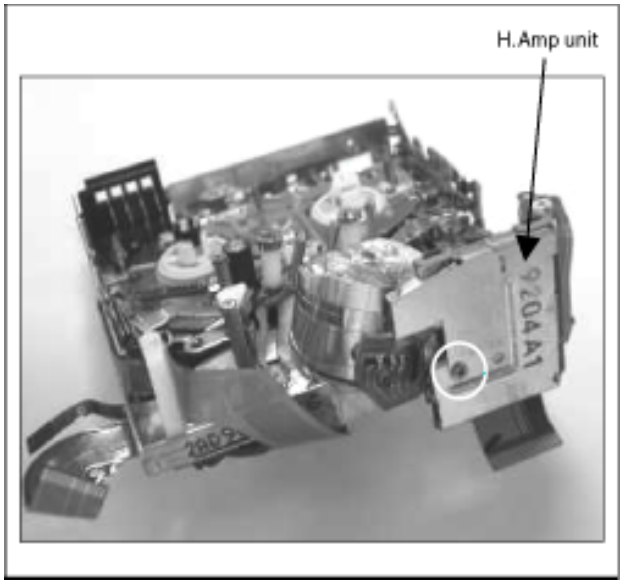


Fig. D2-2

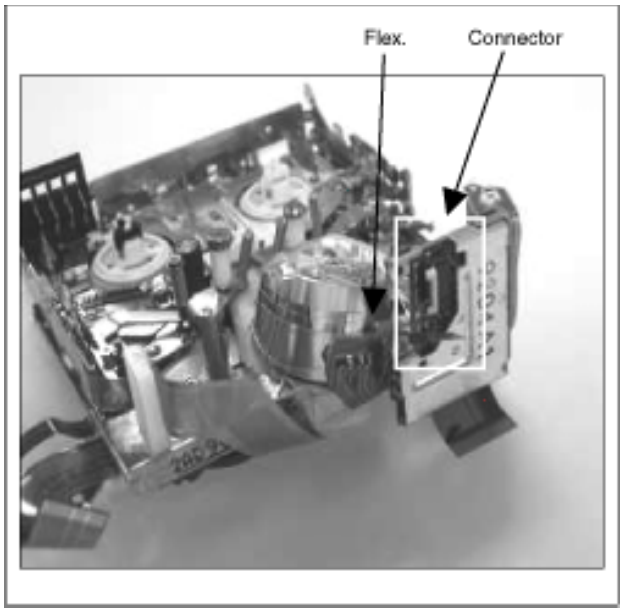
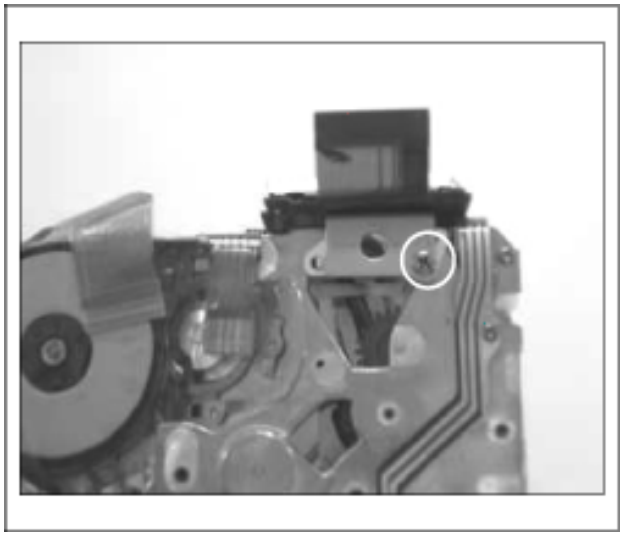


Fig. D2-3



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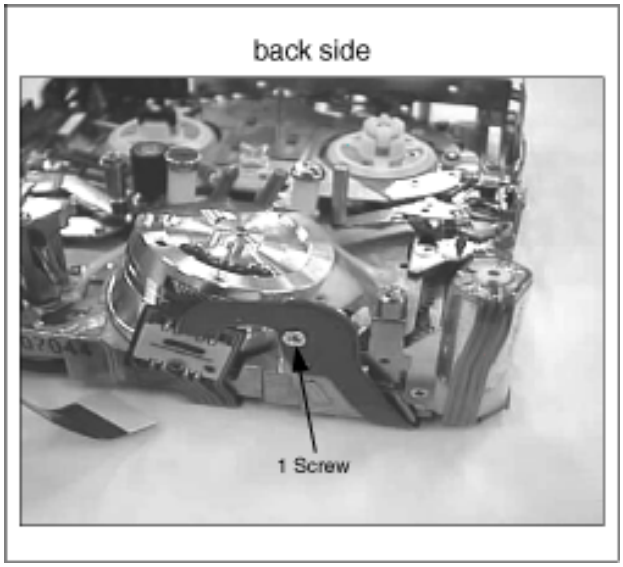

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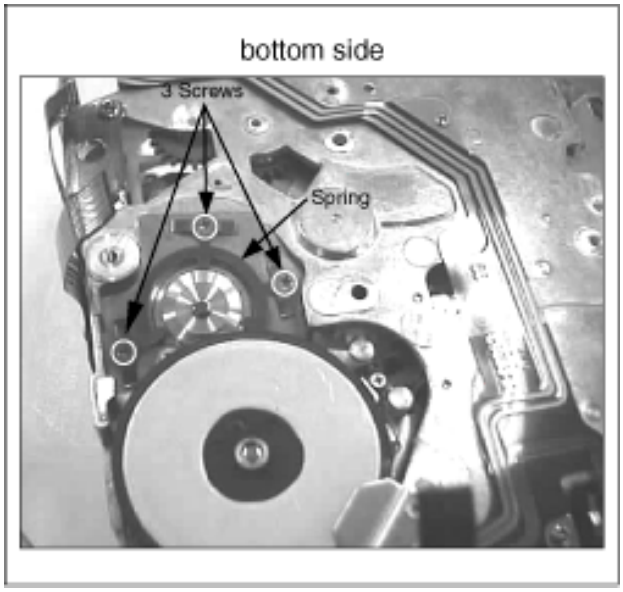

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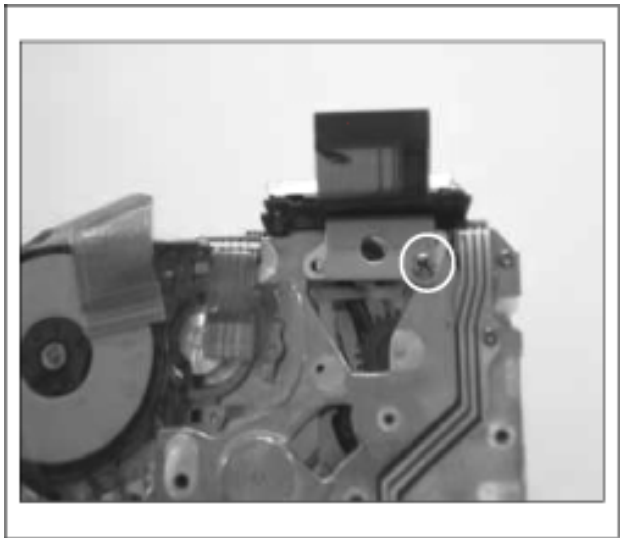


Fig. D4-1

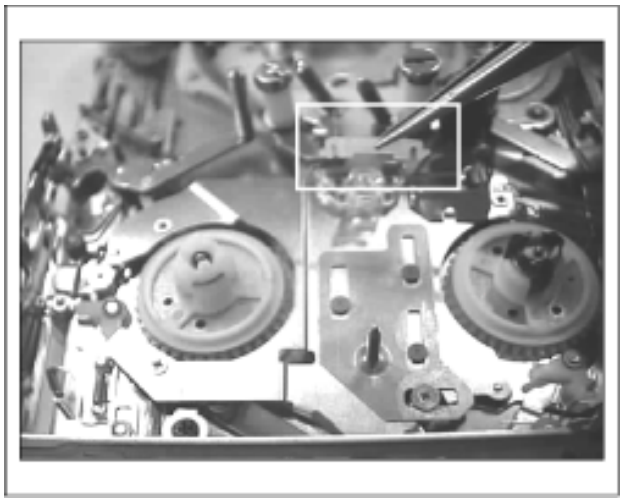


Fig. D4-2

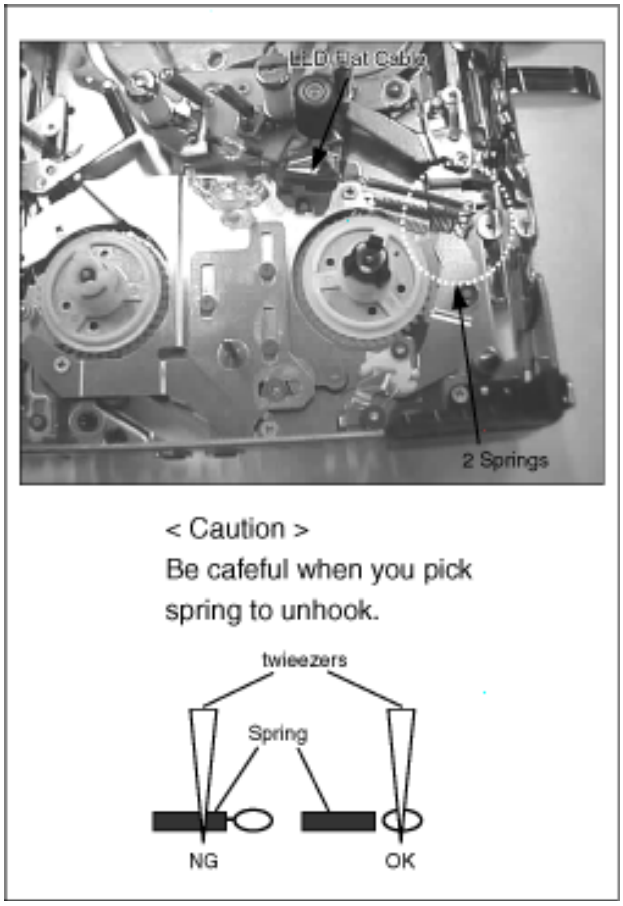
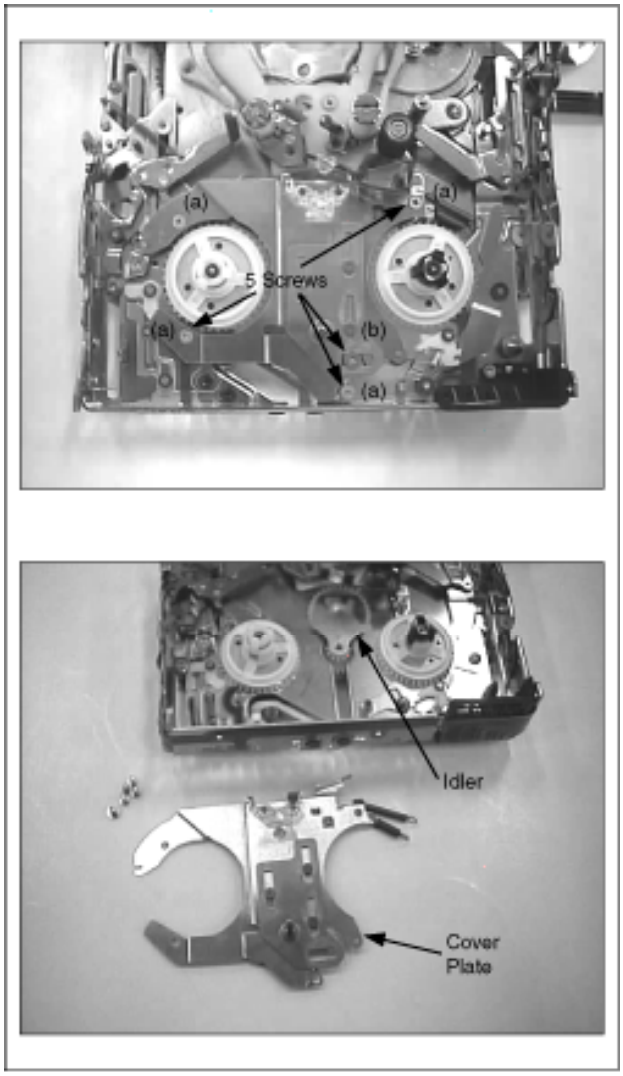

LED Flat Cable
2 Springs
< Caution >
Be cafeful when you pick
spring to unhook.
twieezers
Spring
NG
OK

Fig. D4-3



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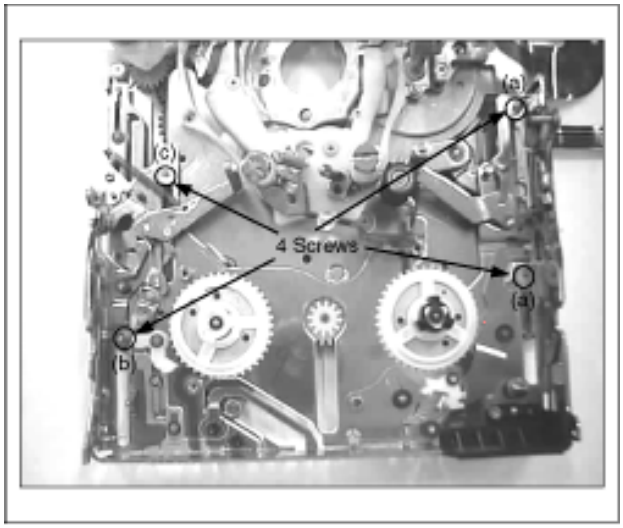
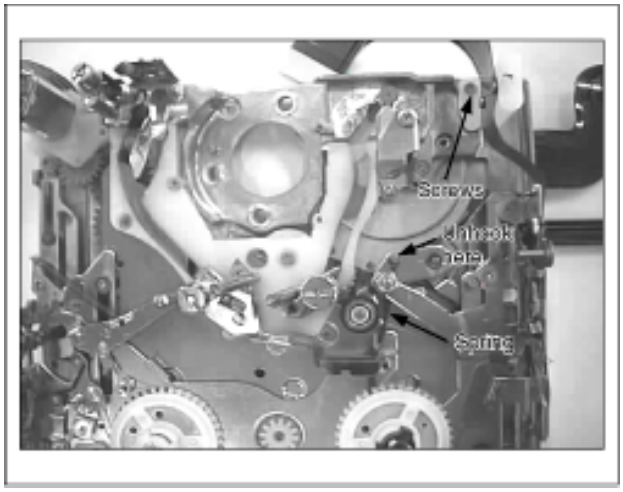


Fig. D5-2



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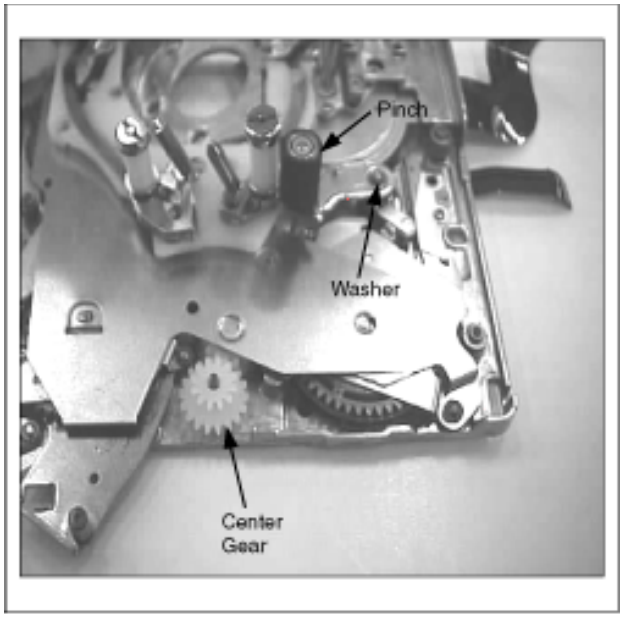


Fig. D6-2

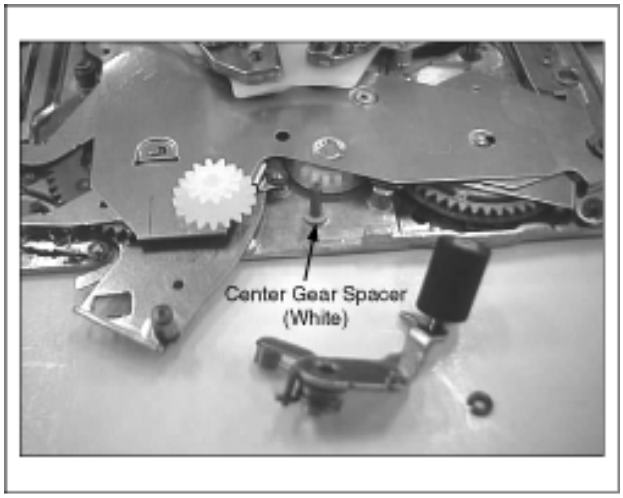


Fig. D7-1

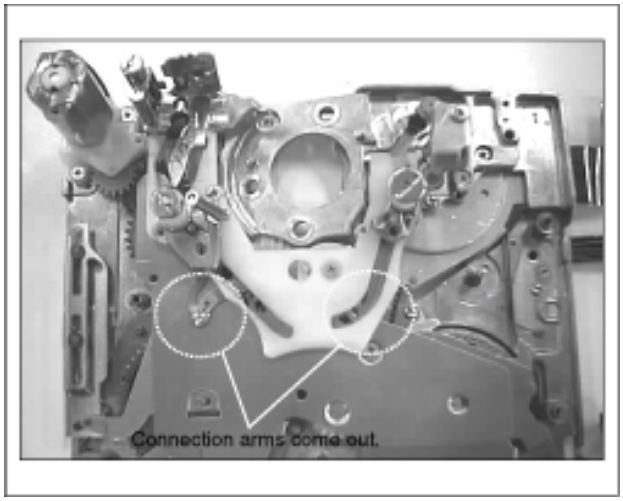


Fig. D7-2

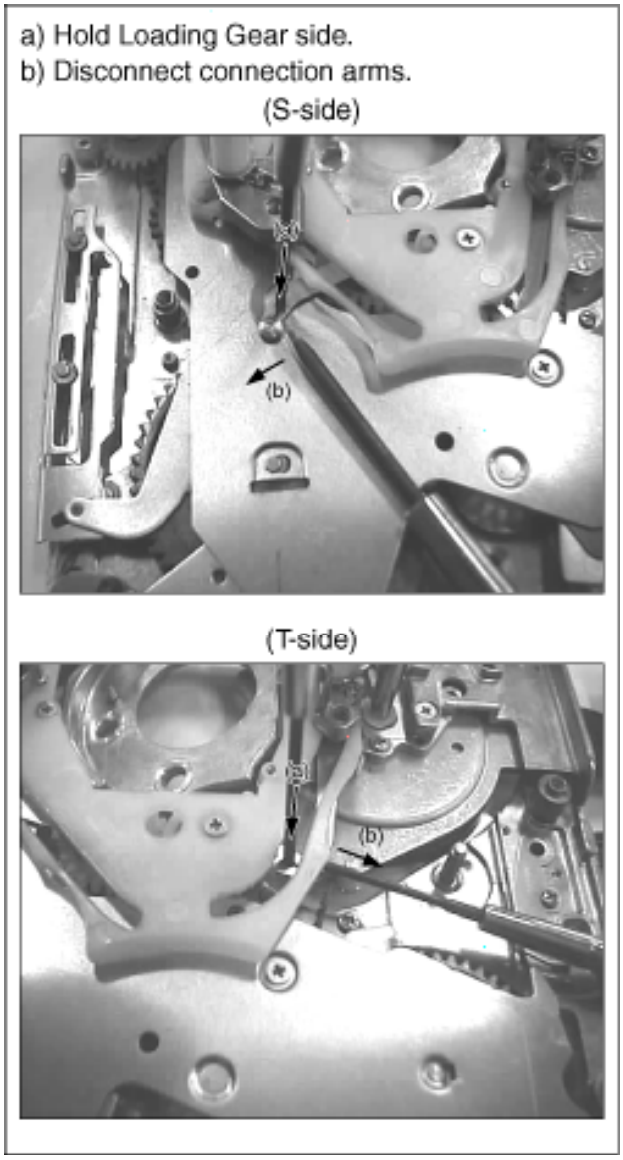

a) Hold Loading Gear side.
b) Disconnect connection arms.
(S-side)
(a)
(b)
(T-side)
(a)
(b)

Fig. D7-3

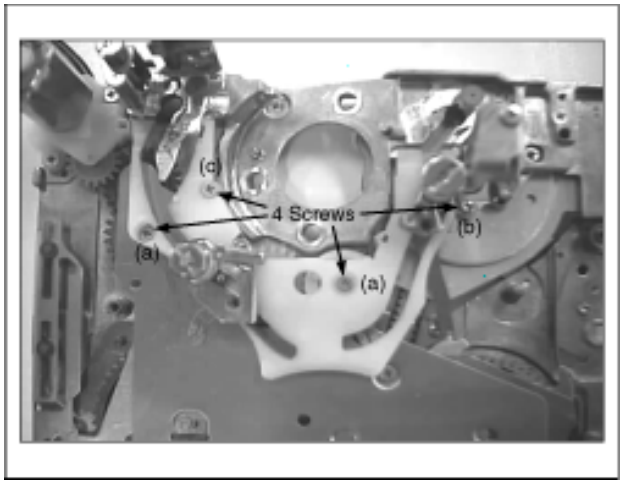

(c)
4 Screws
(b)
(a)
(a)

Fig. D8

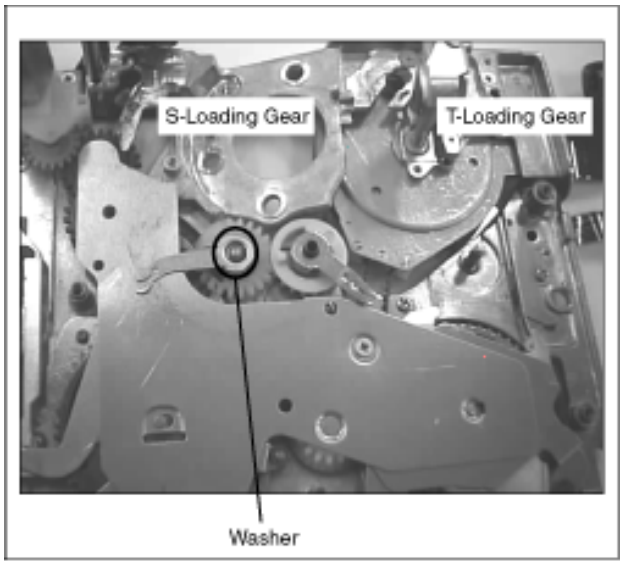


Fig. D9

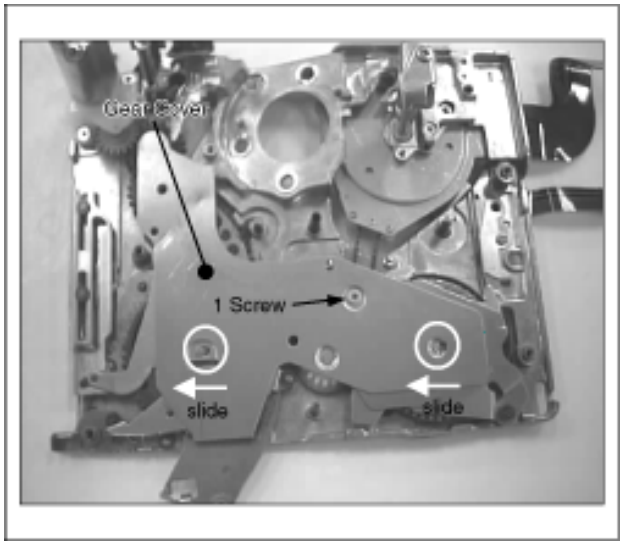


Fig. D10

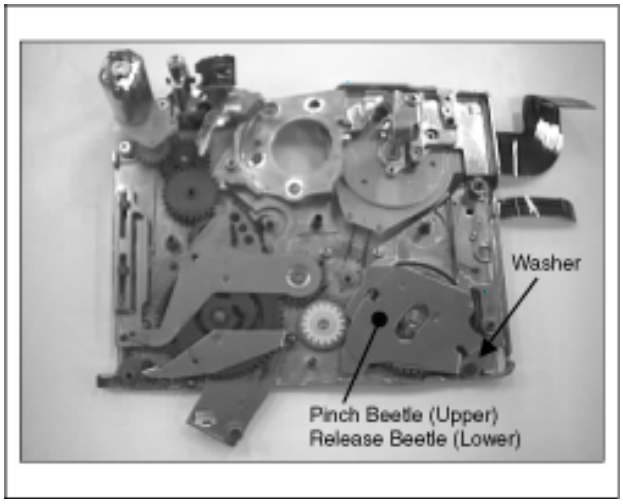


Fig. D11

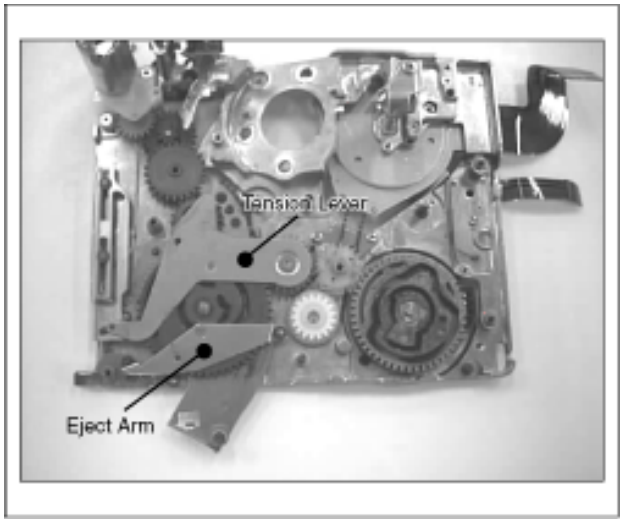


Fig. D12

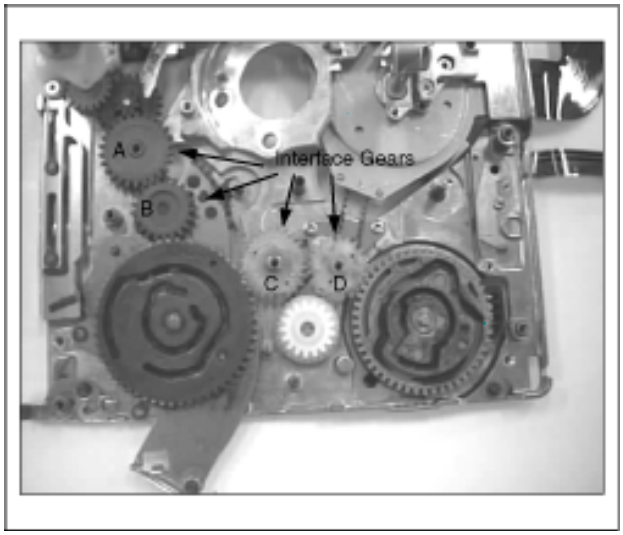
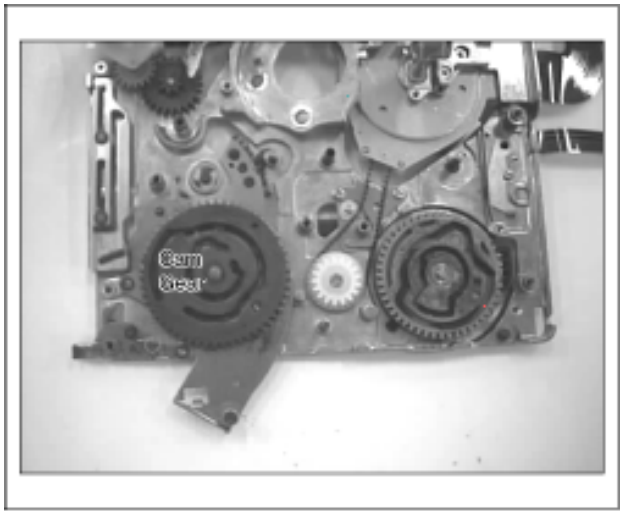


Fig. D13



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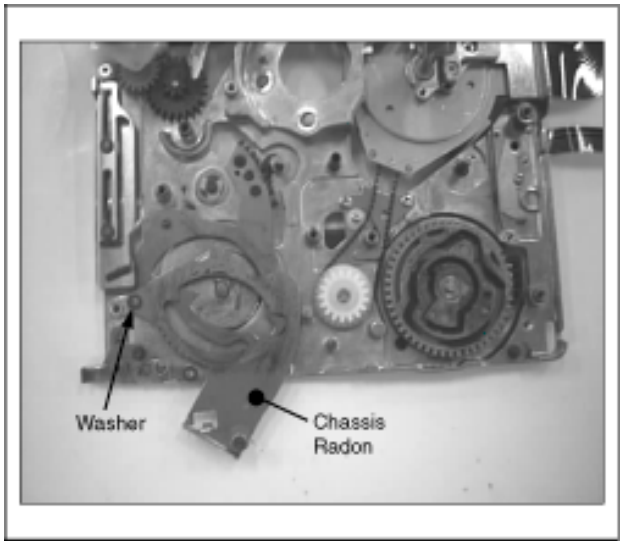

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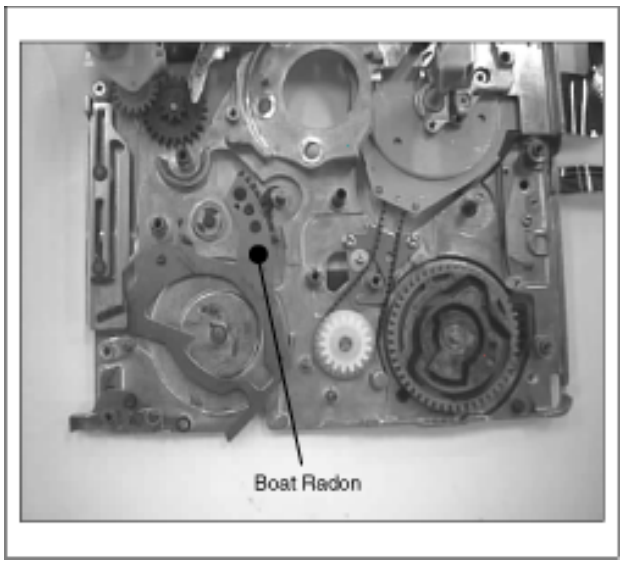


Fig. D16

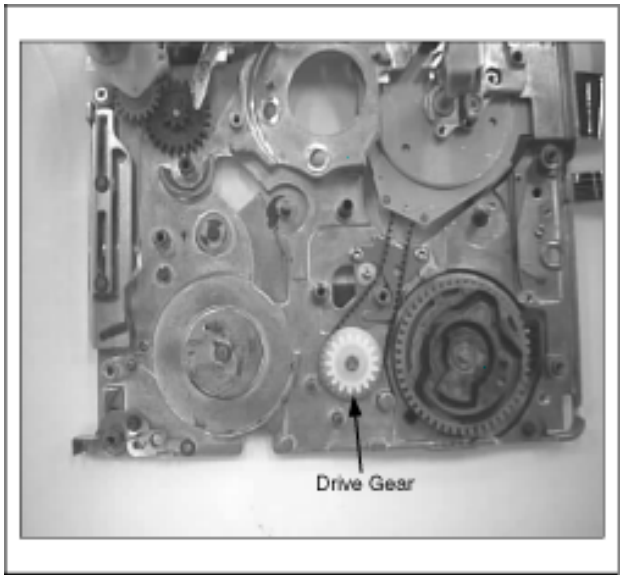


Fig. D17-1

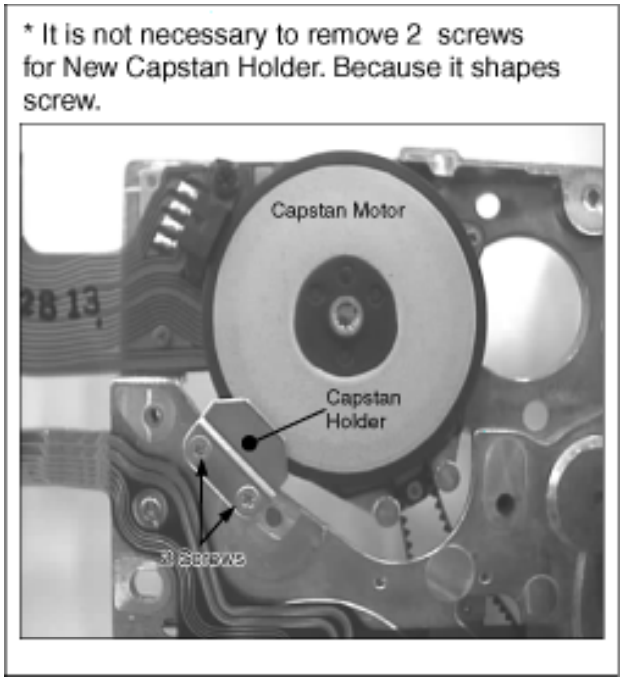
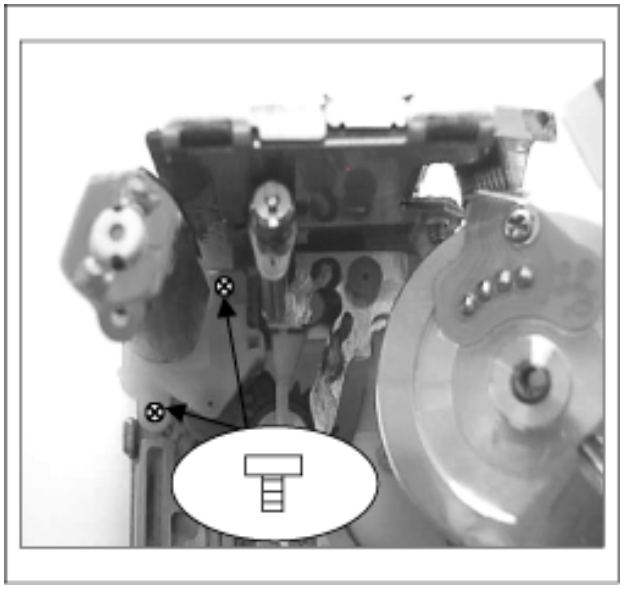


Fig. D17-2

Fig. D18-1



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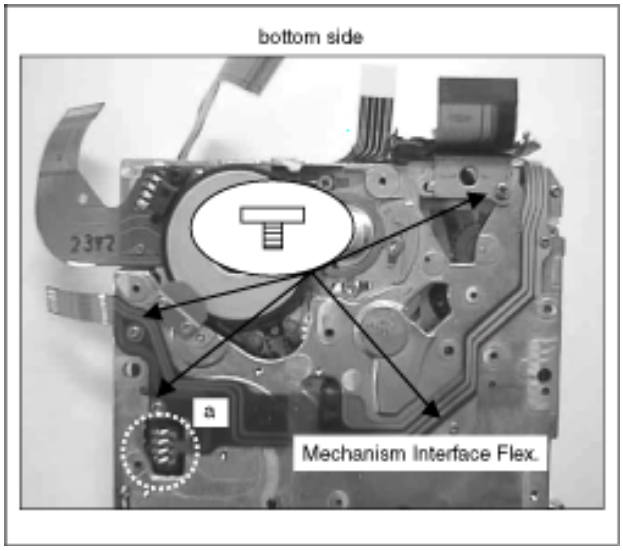
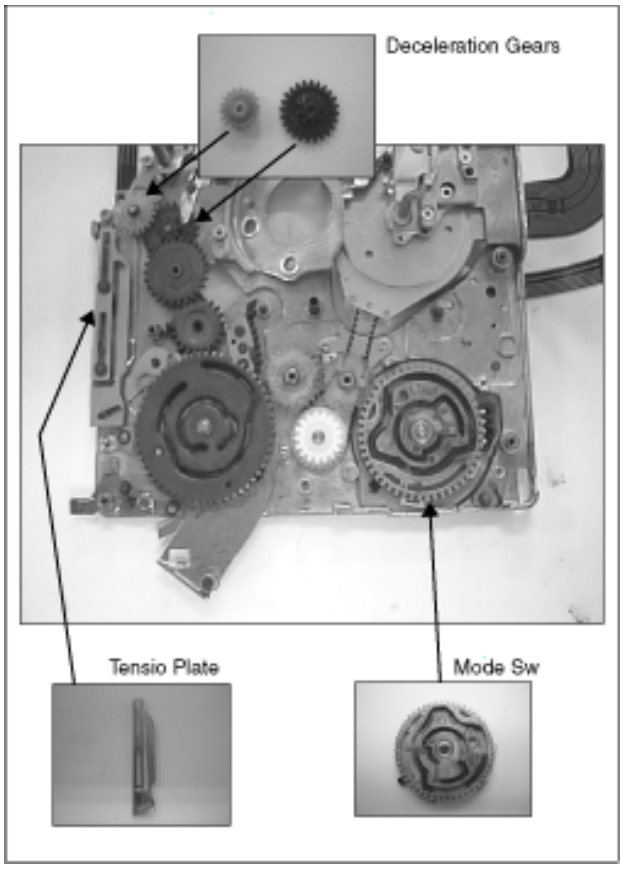


Fig. D19



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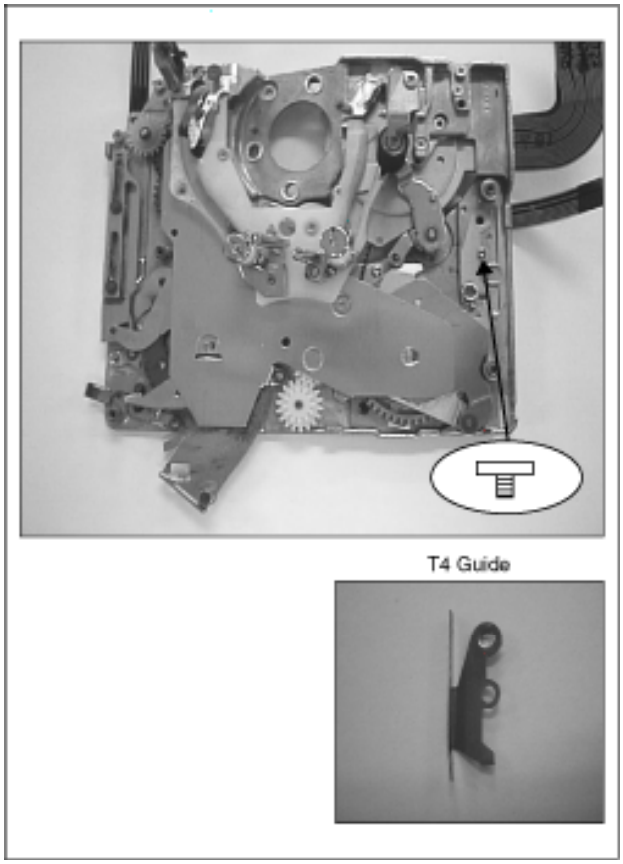

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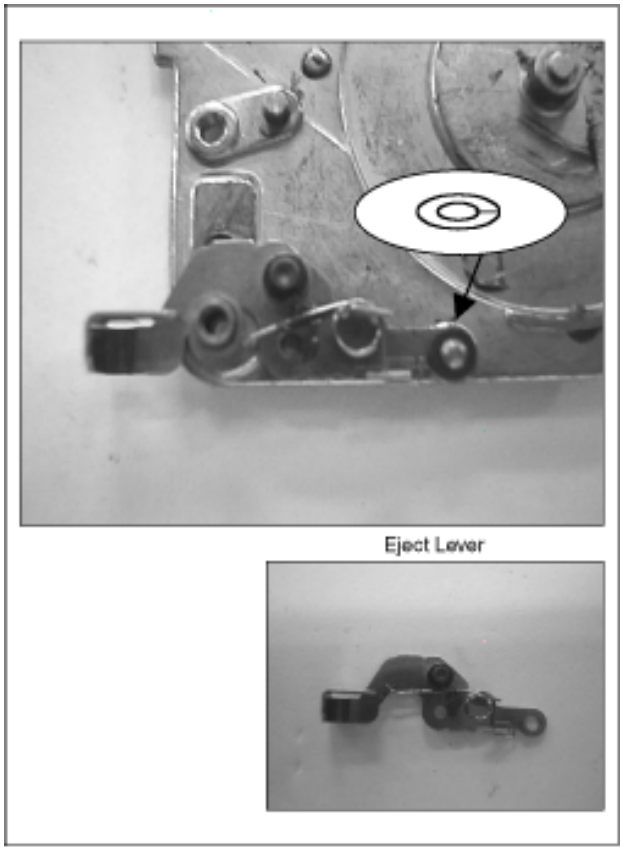

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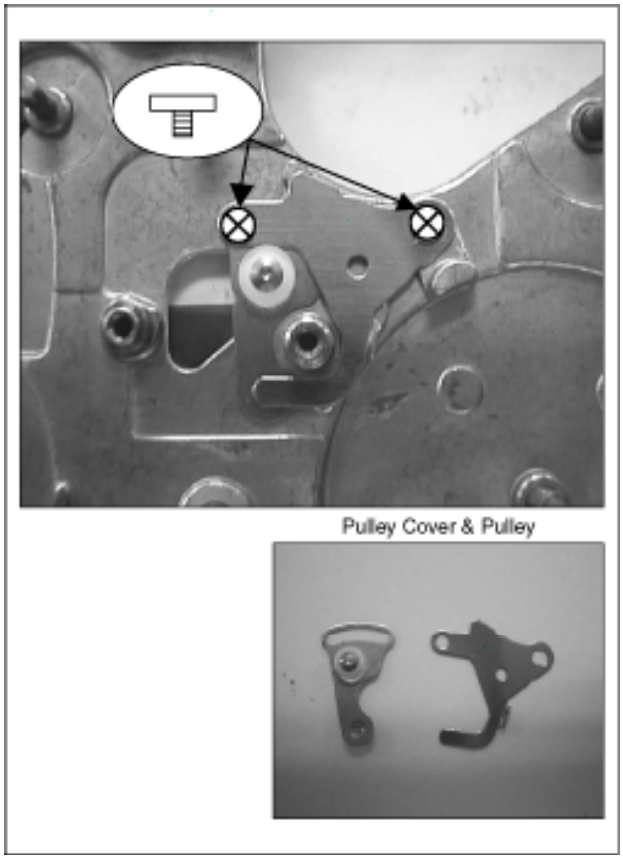
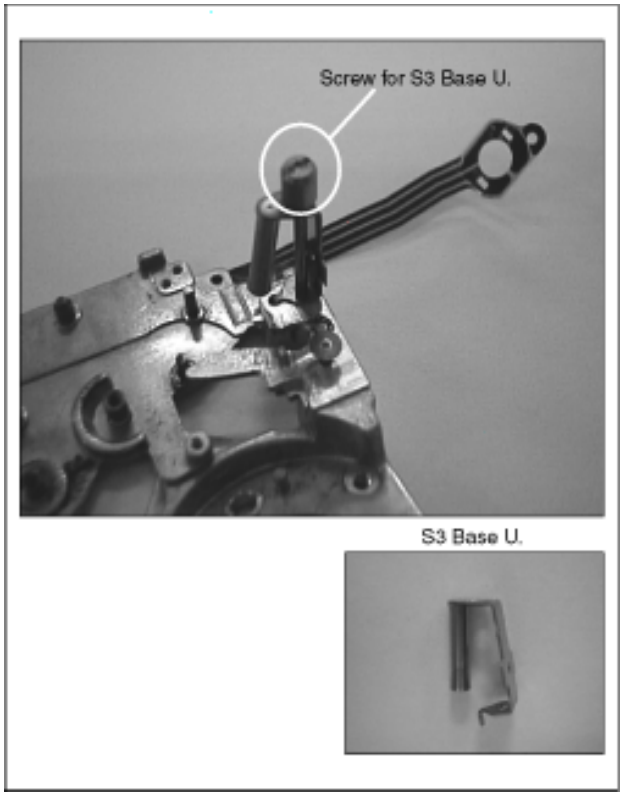


Fig. D21



4.1 ASSEMBLY PROCEDURE

TOP PREVIOUS NEXT

* 1) Procedure 20 for H.Amp Unit is applied only Q1 & Q2 mechanism.

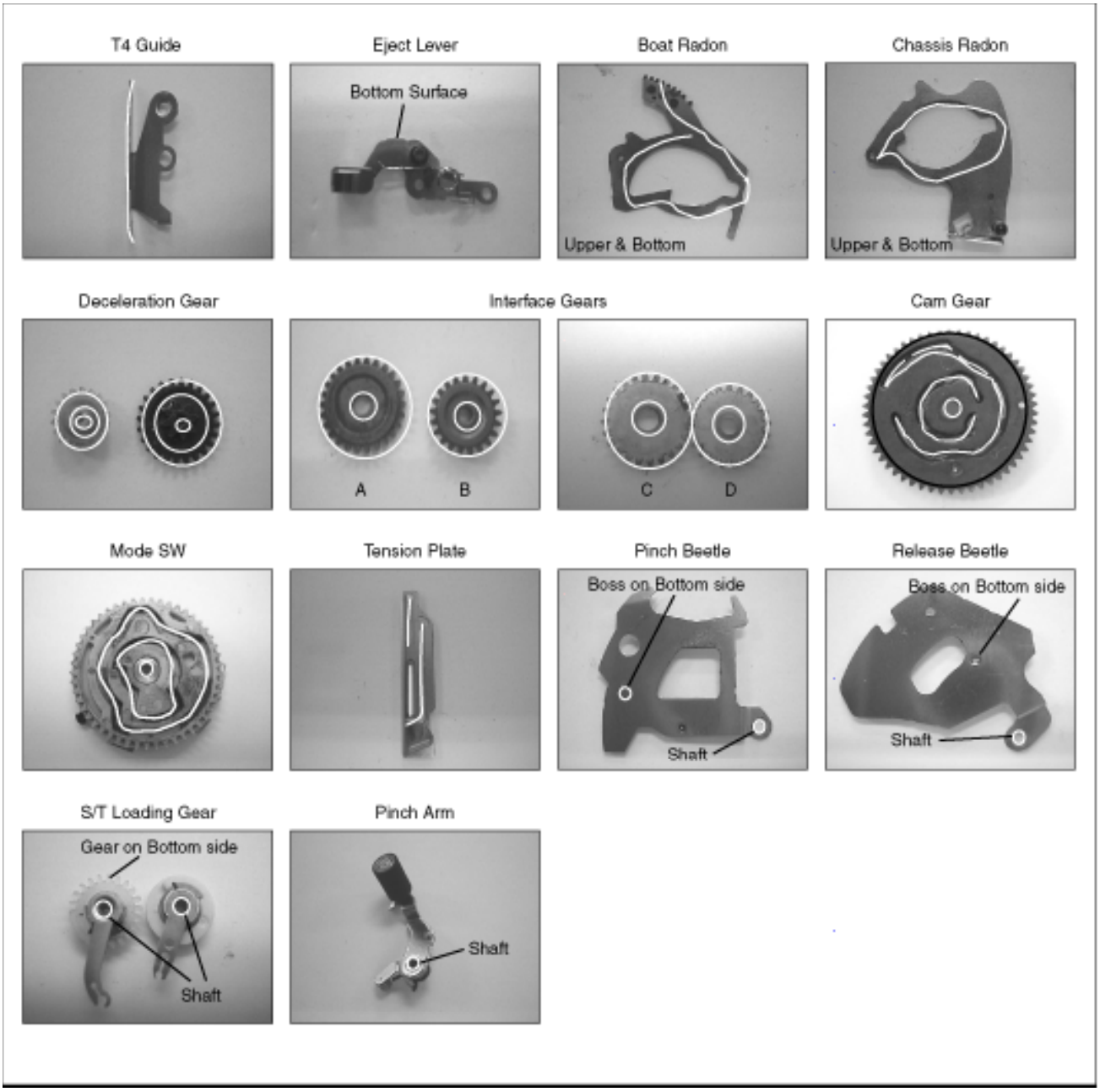
2) Procedure 1 - 3 can be changed in order.

No.	Item	Fig.	Grease	Procedure
*1	S3 Base U.	Fig. A1	--	1) Put S3 Base U on and tighten a screw.
*2	T4 Guide , Eject Lever, Pulley Cover & Pulley.	Fig. A2-1	•	1) Put hole of T4 Guide to hole of chassis and tighten a screw.
		Fig. A2-2	•	2) Put Eject Lever on and a washer.
		Fig. A2-3	--	3) Put boss of Pulley to hole of chassis on. Hole of chassis under pulley should be visible through slit of Pulley.
		Fig. A2-4	--	4) Put Pulley Cover on Pulley and tighten 2 screws.
*3	Mode Switch , Deceleration Gears & Tension Plate.	Fig. A3	•	1) Put Mode Sw on.
			•	2) Put Deceleration Gear (B) on
			•	3) Put Deceleration Gear (A) on and a washer.
			•	4) Put Tension Plate on and 2 washers.
4	Loading Motor unit & Mechanism Interface Flex.	Fig. A4	--	1) Put Loading Motor Unit on and tighten 2 screws.
			--	2) Put Mechanism Interface Flex on and tighten 4 screws. After that, solder at terminal of Mode Sw.
5	Capstan Holder & Capstan Motor	Fig. A5-1	--	1) Put Capstan Motor on and tighten 3 screws. Timing Belt should be between Pulley and boss.
		Fig. A5-2	--	2) Put Capstan Holder on and tighten 2 screws.
6	Drive Gear	Fig. A6	--	1) Put a washer to shaft and install Drive Gear. Timing Belt should be wound around Drive Gear. After that, confirm Timing Belt and Gear are rotated together.
7	Boat Radon	Fig. A7	•	1) Put hole of Boat radon to shaft of chassis.
8	Chassis Radon	Fig. A8	•	1) Put Chassis Radon and a washer on.
9	Cam Gear	Fig. A9	•	1) Put Cam Gear on. Phase Mark should be in the same line with chassis of shaft..
10	Interface Gears	Fig. A10-1	•	1) Put Interface Gear(C) & (D). Each phase mark should be in the same line.
		Fig. A10-2	•	2) Put Interface Gear(A) & (B) on.
11	Tension Lever & Eject Arm.	Fig. A11	--	1) Put boss of Tension Lever into slit of Cam Gear and Tension Plate, then tighten a screw.

				2) Put boss of Eject Arm into slit of Cam Gear. Put a washer on shaft of chassis.
12	Pinch Beetle & Release Beetle	Fig. A12	•	1) Put boss of Pinch Beetle into slit of Mode Sw.
				2) Put boss of Release Beetle into slit of Mode Sw.
				3) Put a washer on.
13	Gear Cover	Fig. A13	--	1) Keep sliding Gear Cover and put it on.
				2) Tighten a screw.
14	T-Loading Gear & S-Loading Gear	Fig. A14	•	1) Put S-Loading Gear on.
				2) Put T-Loading Gear on. Each phase mark should be in the same line.
15	Rail Unit	Fig. A15-1	--	1) Make half loading until Connection Arm comes out.
		Fig. A15-2	--	2) Connect Arm of S & T Loading Gear and Connection Arms. a) Hold Loading Gear side. b) Push Arm of S & Tloading Gear into slit of connection arms.
		Fig. A15-3	--	3) Tighten 4 screws.
16	Pinch Arm & Center Gear	Fig. A16-1	--	1) Put Center Gear Spacer on shaft of chassis.
				2) Put Center Gear on.
		Fig. A16-2	•	3) Make full loading position and put Pinch arm on, then put a washer on.
17	Sub Chassis Unit	Fig. A17-1	--	1) Make unloading position until moving Release Beetle Confirm spring is exist.
		Fig. A17-2		2) Put Sub Chassis Unit on as pre-installation.
		Fig. A17-3		3) Tighten 3 screws. Make Loading position until 1 screw position appears, then tighten a screw.
		Fig. A17-4		4) Tighten a screws at Flex Holder portion and Hook spring back to Pinch Arm.
18	LED Holder, Cover plate & Idler U.	Fig. A18-1	--	1) Put Idler U into shaft of Drive Gear.
		Fig. A18-2	--	2) Put Cover Plate on and tighten 5 screws, then hook 2 springs to 2hooking portion of Sub chassis. And also put LED Flat Cable back.
		Fig. A18-3		3) Put LED Holder back.
19	Confirmation of Mechanism movement , Cylinder Unit & RT Flex. Flame.	Fig. A19-1	--	1) Confirm loading and unloading is smooth.
		Fig. A19-2	--	2) Put Cylinder Unit & Spring on and tighten 3 screws.
		FIg. A19-3	--	3) Put RT Flex. Flame on and tighten 2 screws.
*20	H Amp Unit. (Only Q1 & Q2)	Fig. A20-1	--	1) Put H Amp Unit on and tighten a screw at bottom of chassis.
		Fig. A20-2		2) Connect Cylinder Flex to connector.

		Fig. A20-3		3) Put Shield case on and tighten a screw.
21	Cassette Up Unit.	Fig. A21-1	--	1) Put both S &T sides to coupling portion on.
		Fig. A21-2		2) Tighten 3 screws. (Q1 &2 have 4 screws)

The following parts should be applied Molyton Grease (VFK1024).



How to use washer jigs.

No.	Item	Fig.	Procedure

1	Washer Jigs	Fig. W1-1	1) Each Washers.
2		Fig. W1-2	1) Put a washer on tip of Jig.
3		Fig. W1-3	1) Put Jig on shaft.
4		Fig. W1-4	1) Put a washer on shaft by pressing Jig.

Fig. W1-1

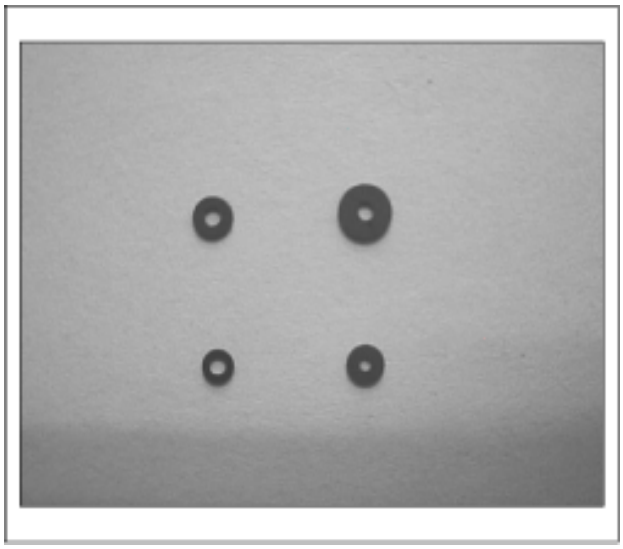


Fig. W1-2

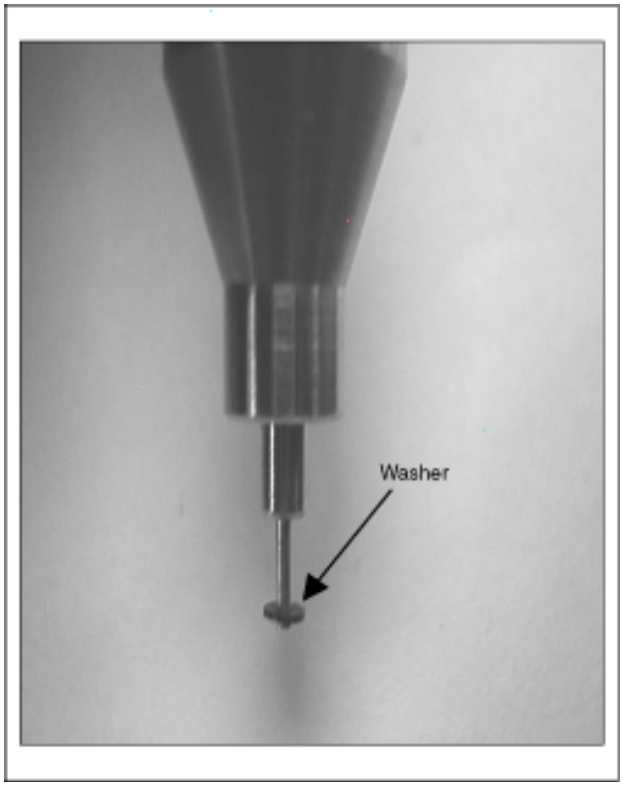


Fig. W1-3

Fig. W1-4

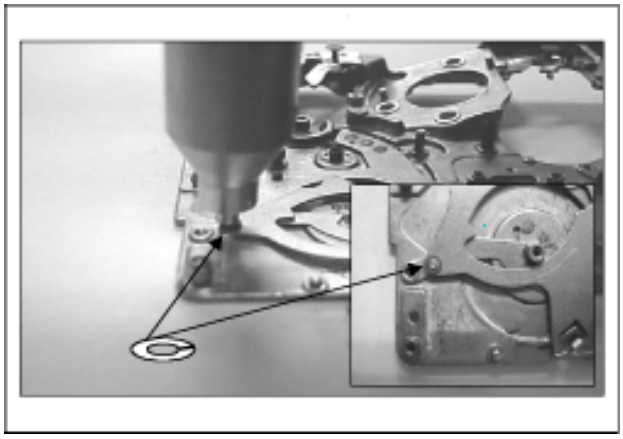


Fig. A1

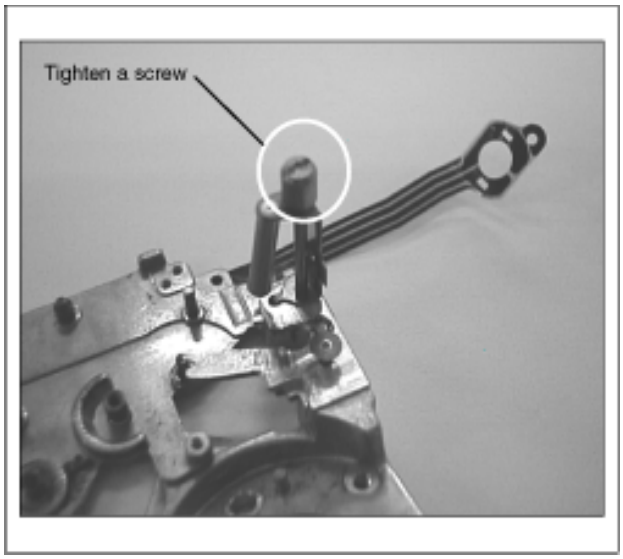


Fig. A2-1

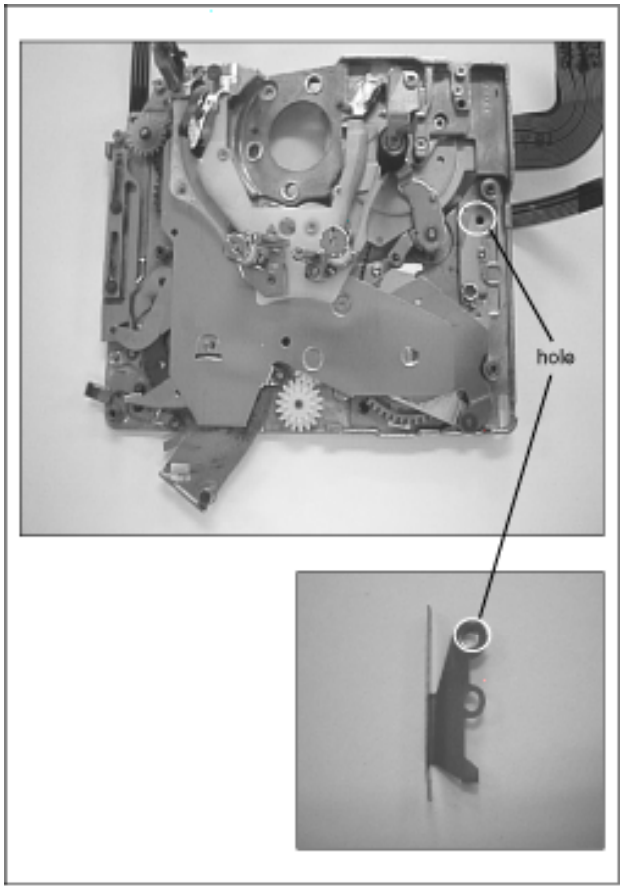


Fig. A2-2

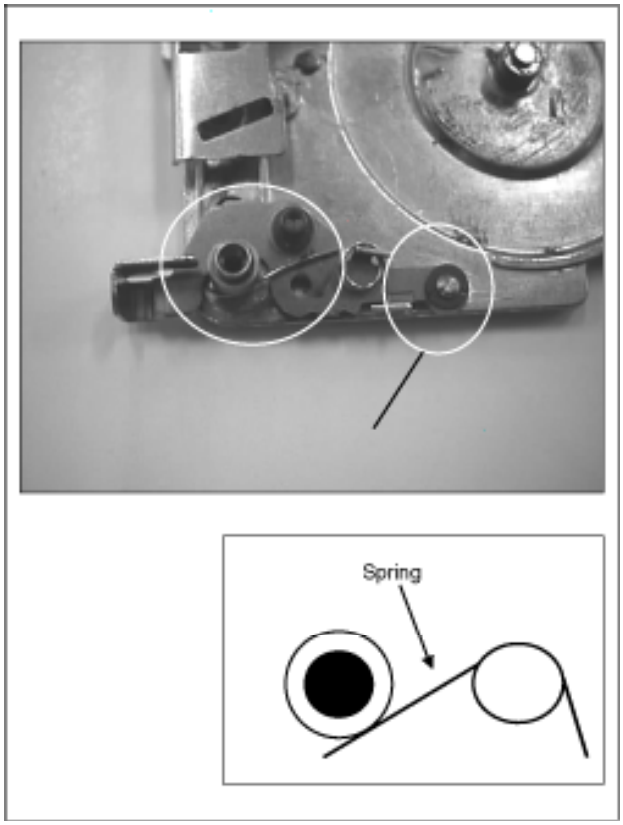


Fig. A2-3

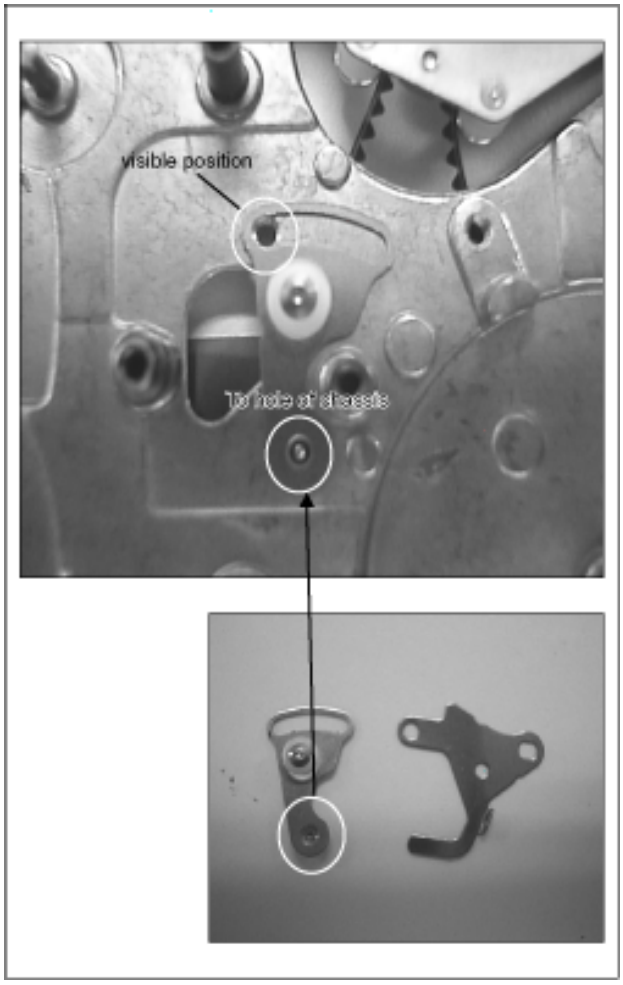


Fig. A2-4

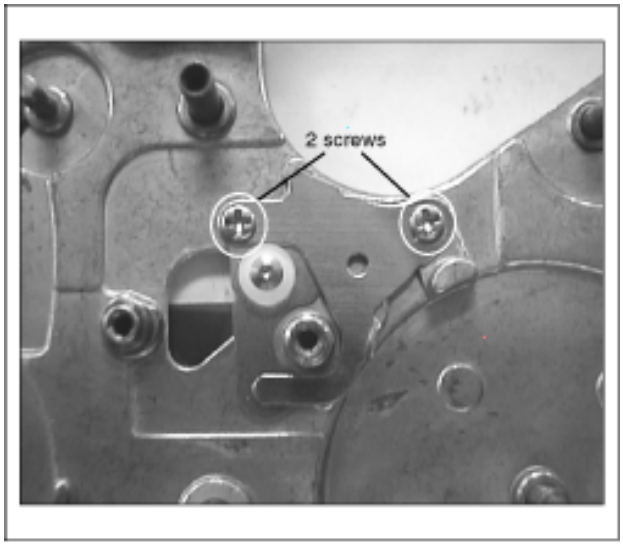


Fig. A3

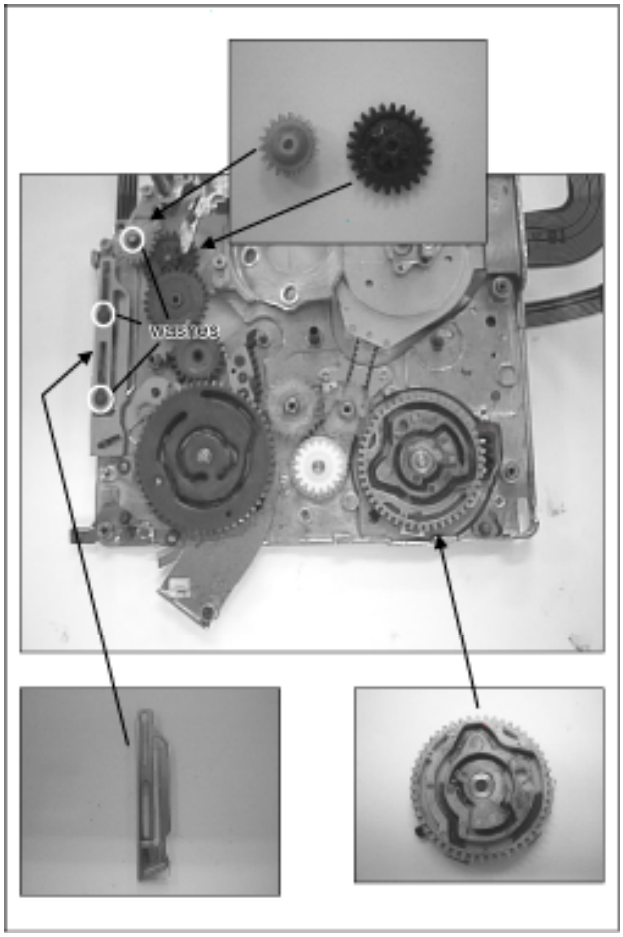


Fig. A4

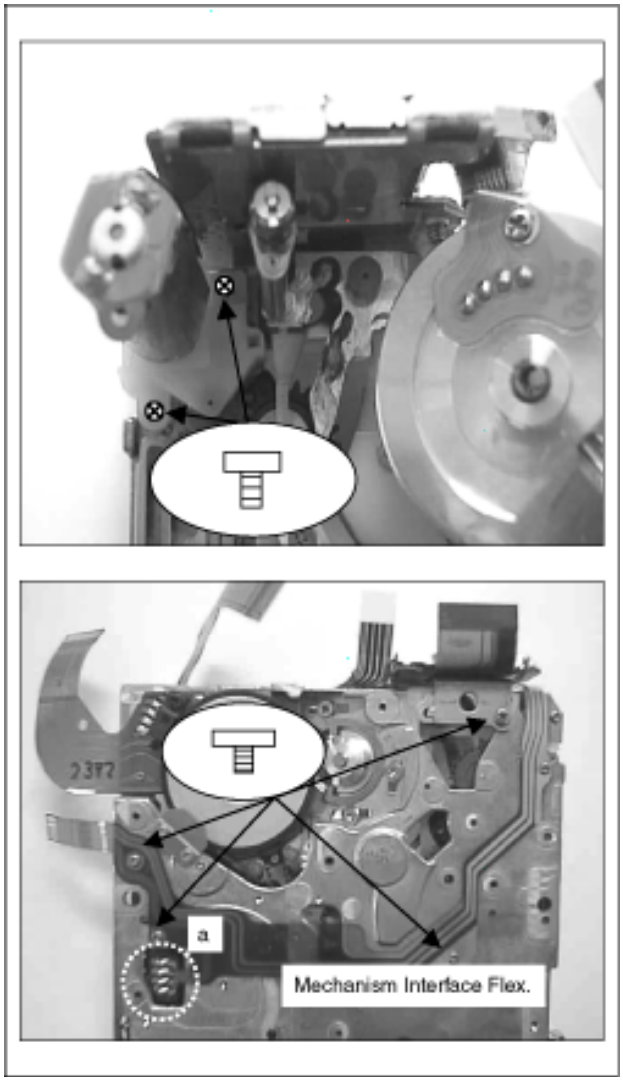


Fig. A5-1

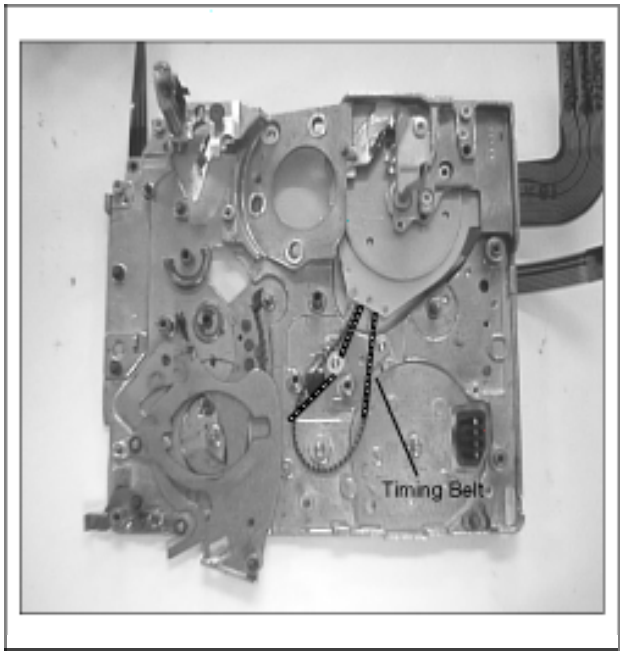


Fig. A5-2

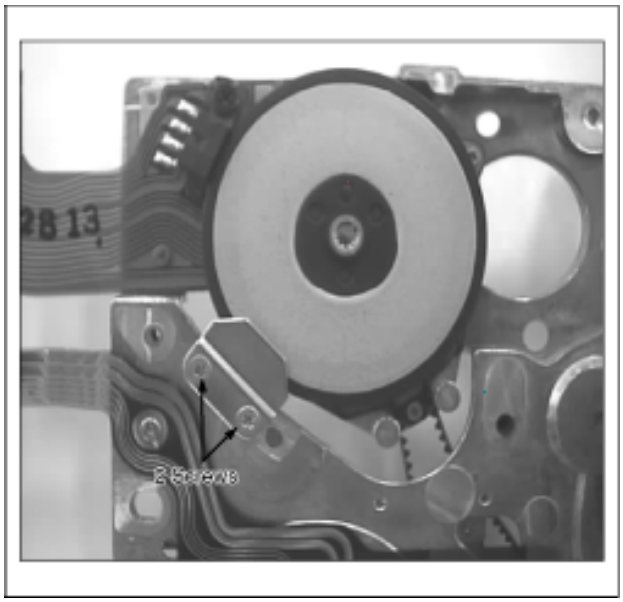


Fig. A6

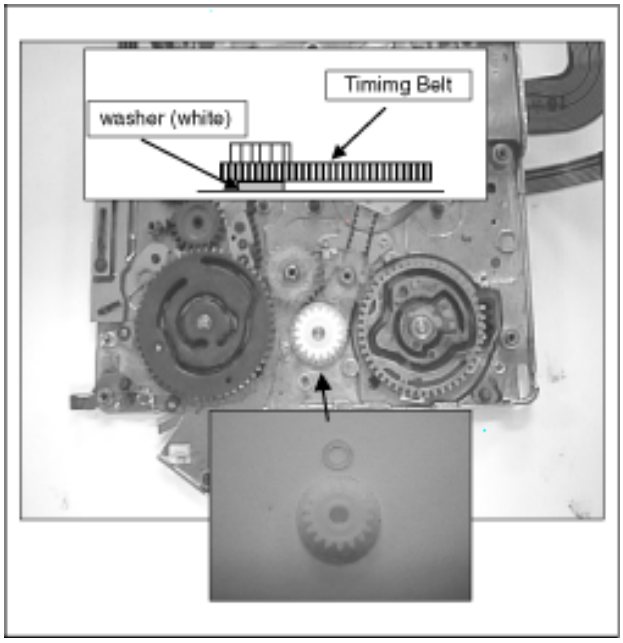


Fig. A7

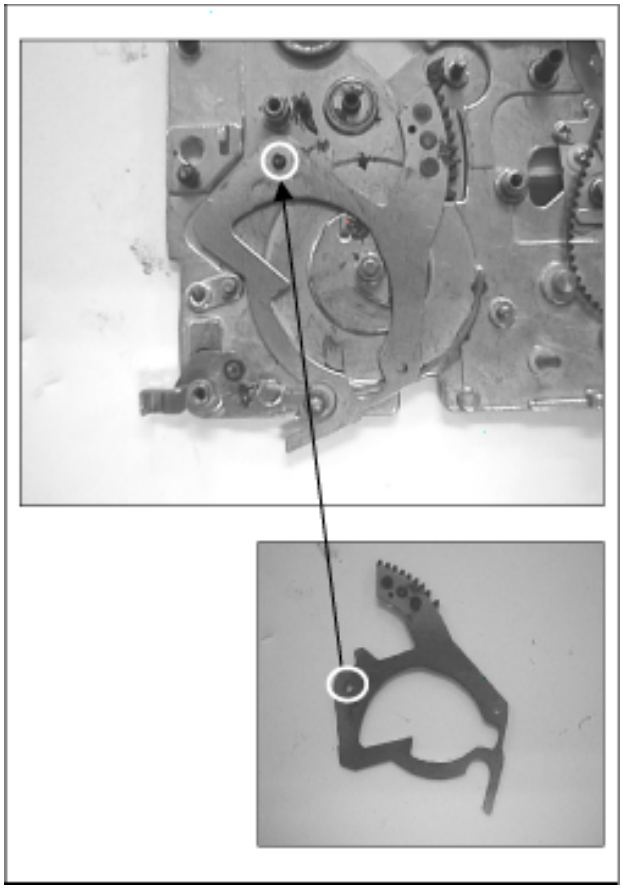


Fig. A8

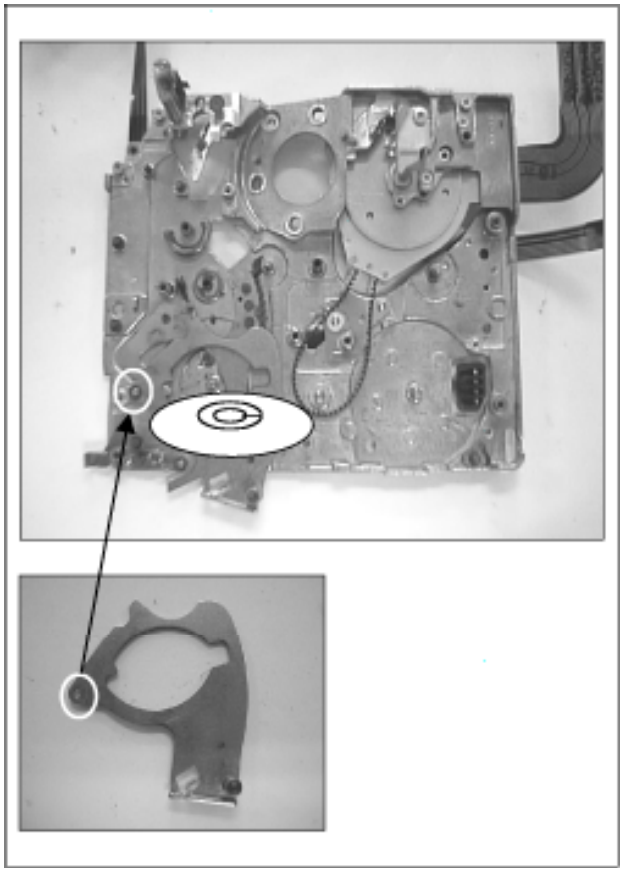


Fig. A9

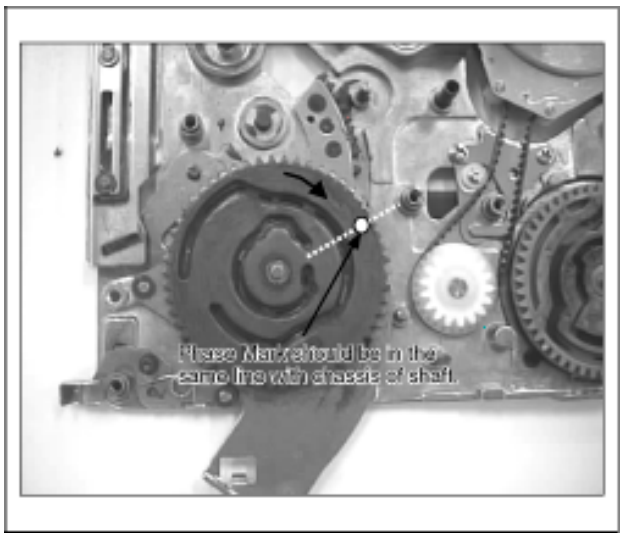


Fig. A10-1

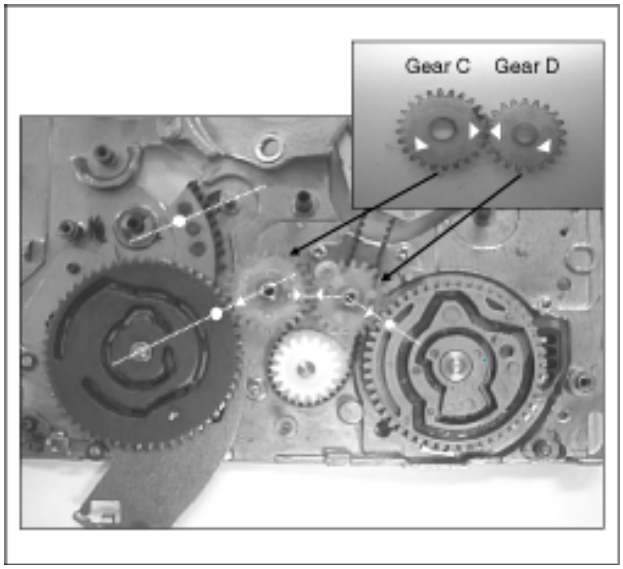


Fig. A10-2

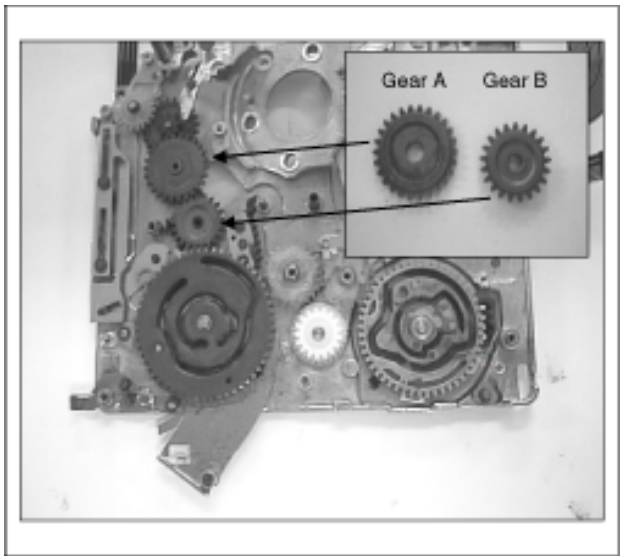


Fig. A11

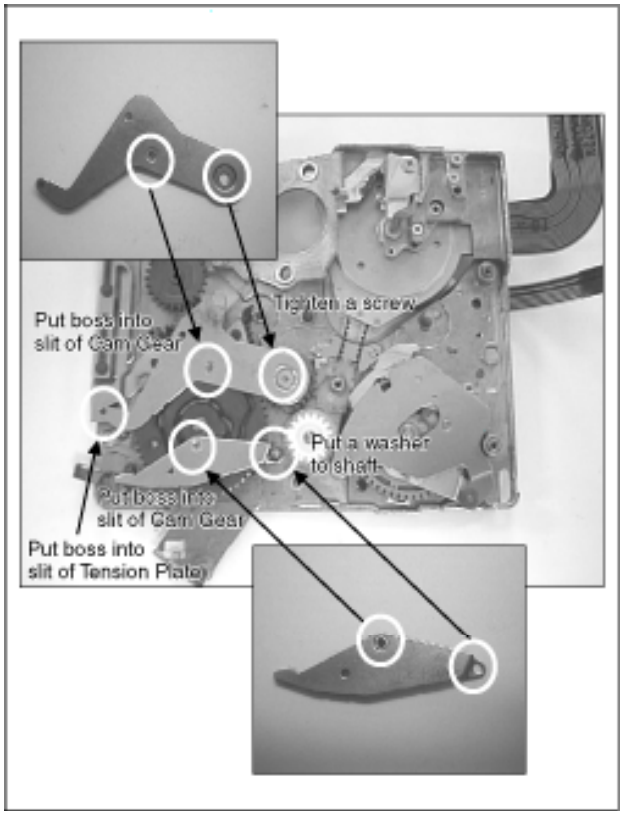

Put boss into slit of Cam Gear
Tighten a screw
Put a washer to shaft
Put boss into slit of Cam Gear
Put boss into slit of Tension Plate

Fig. A12

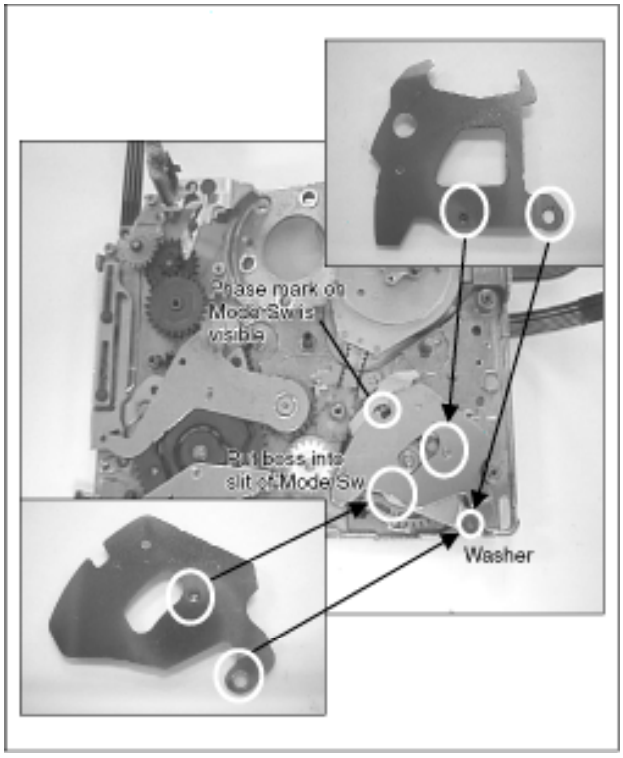


Fig. A13

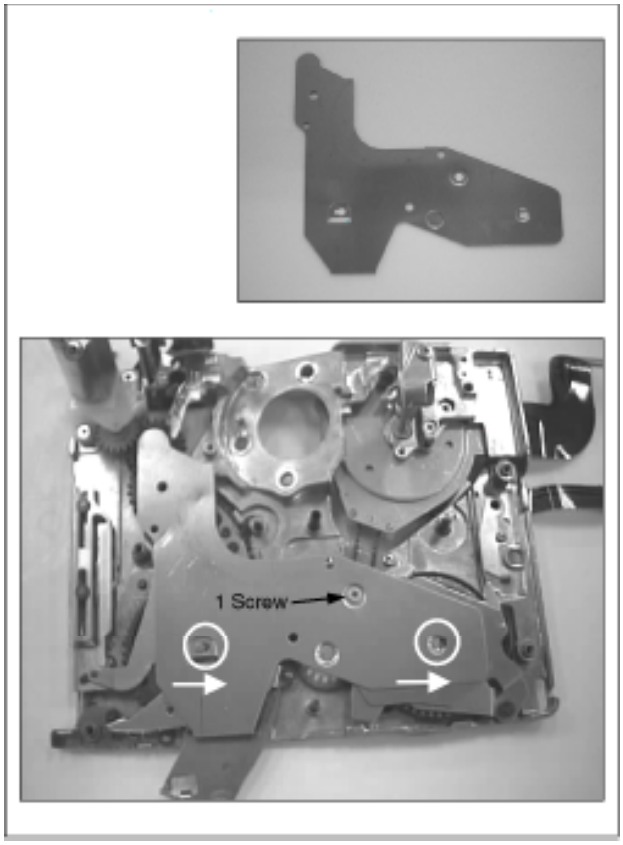


Fig. A14

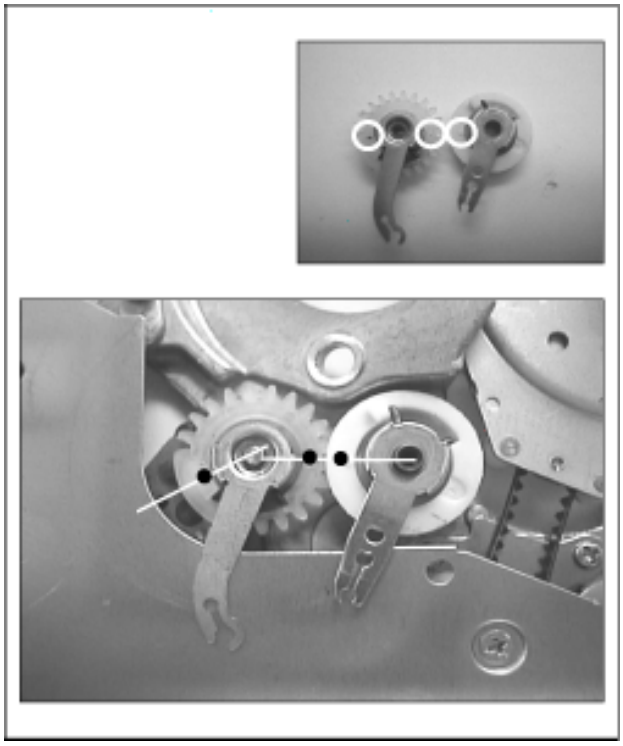


Fig. A15-1

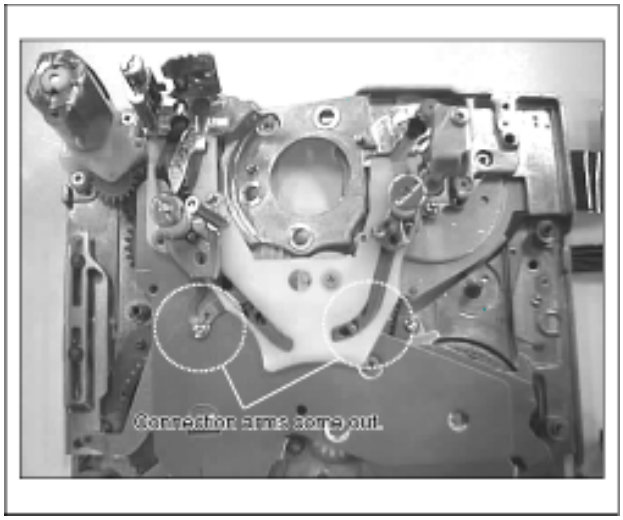


Fig. A15-2

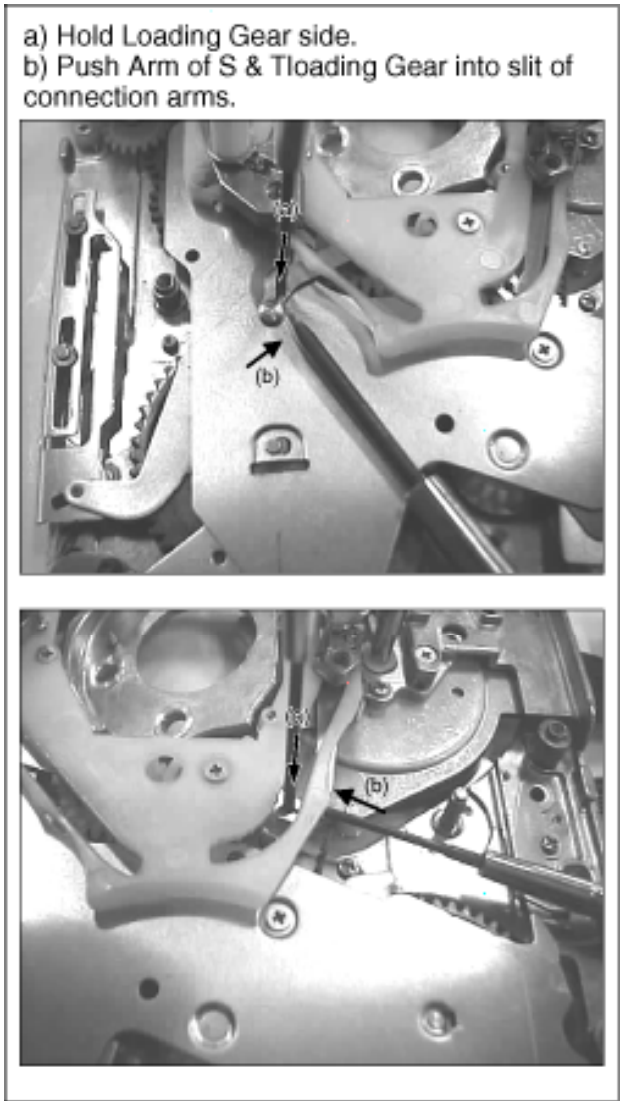

a) Hold Loading Gear side.
b) Push Arm of S & Tloading Gear into slit of connection arms.
(a)
(b)
(a)
(b)

Fig. A15-3

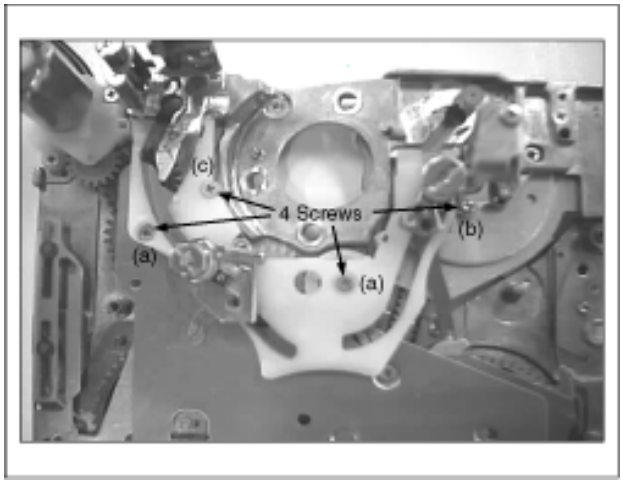

(c)
4 Screws
(b)
(a)
(a)

Fig. A16-1

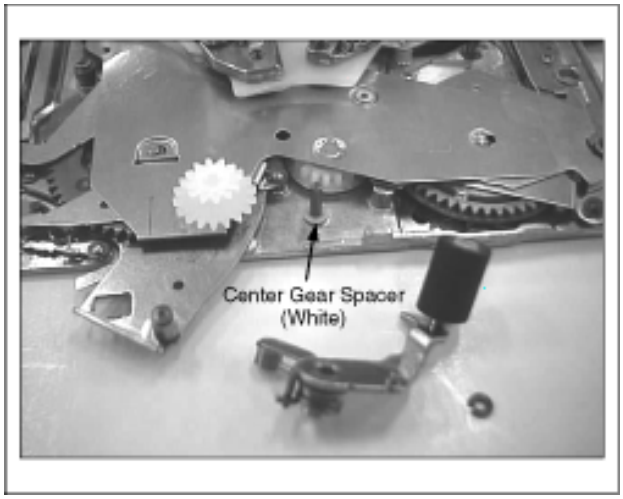


Fig. A16-2

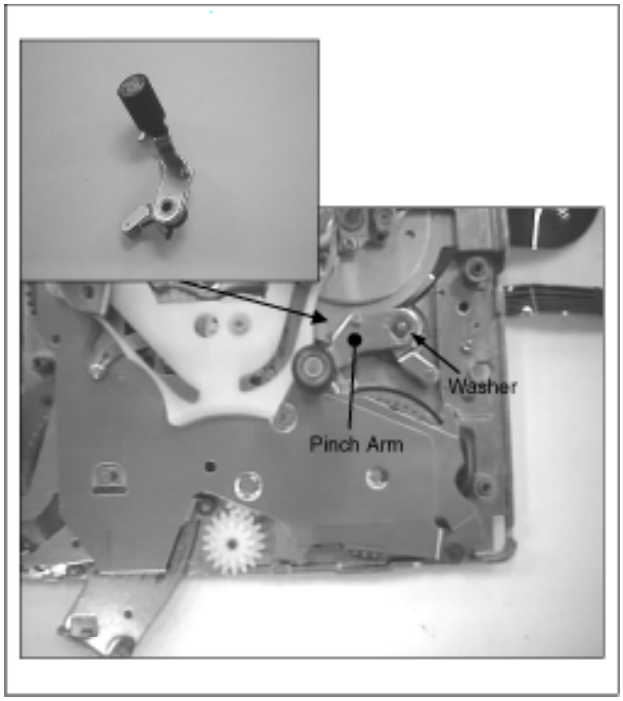


Fig. A17-1

Bottom Side of Take up

Fig. A17-2

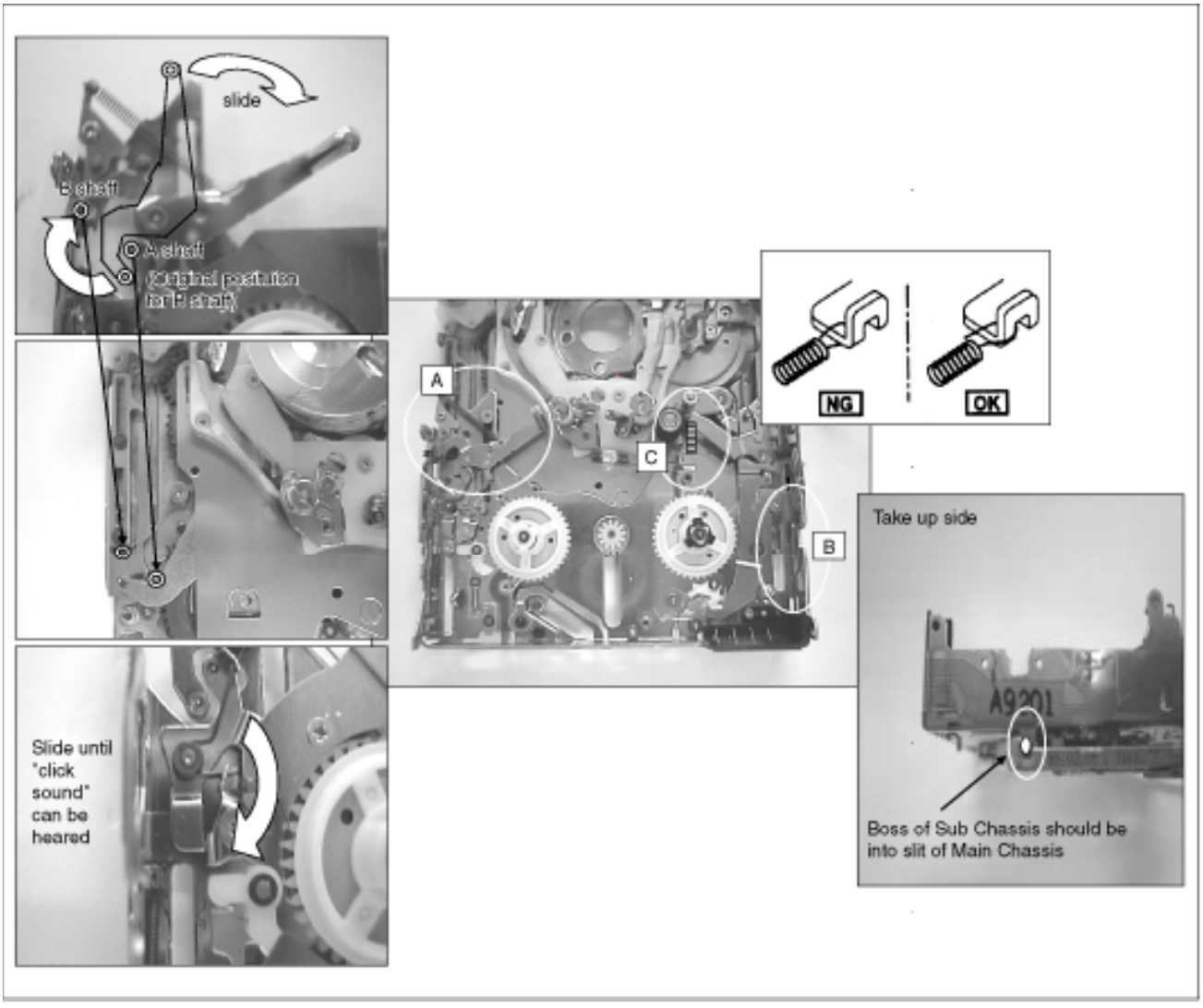

slide
B shaft
A shaft
(Original position for B shaft)
A
C
B
NG
OK
Take up side
A9201
Boss of Sub Chassis should be into slit of Main Chassis
Slide until "click sound" can be heared

Fig. A17-3

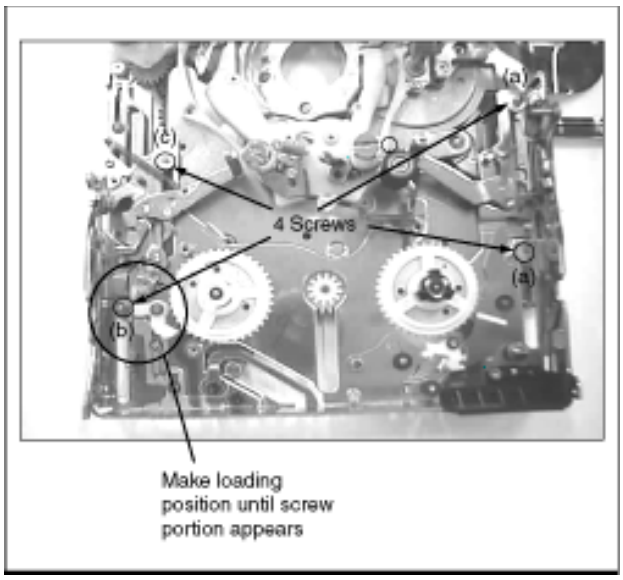


Fig. A17-4

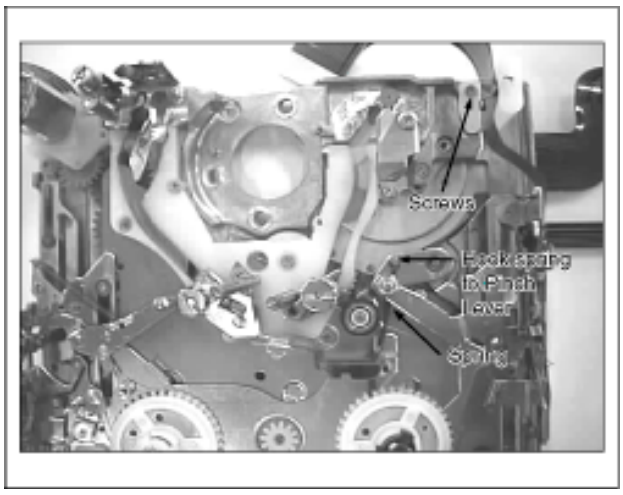


Fig. A18-1

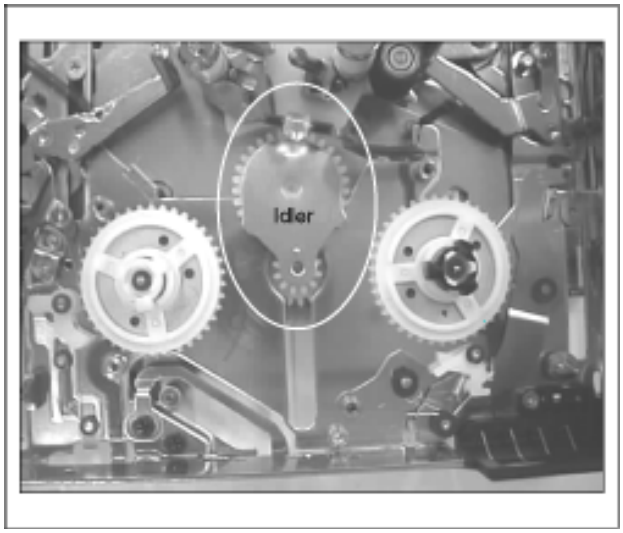


Fig. A18-2

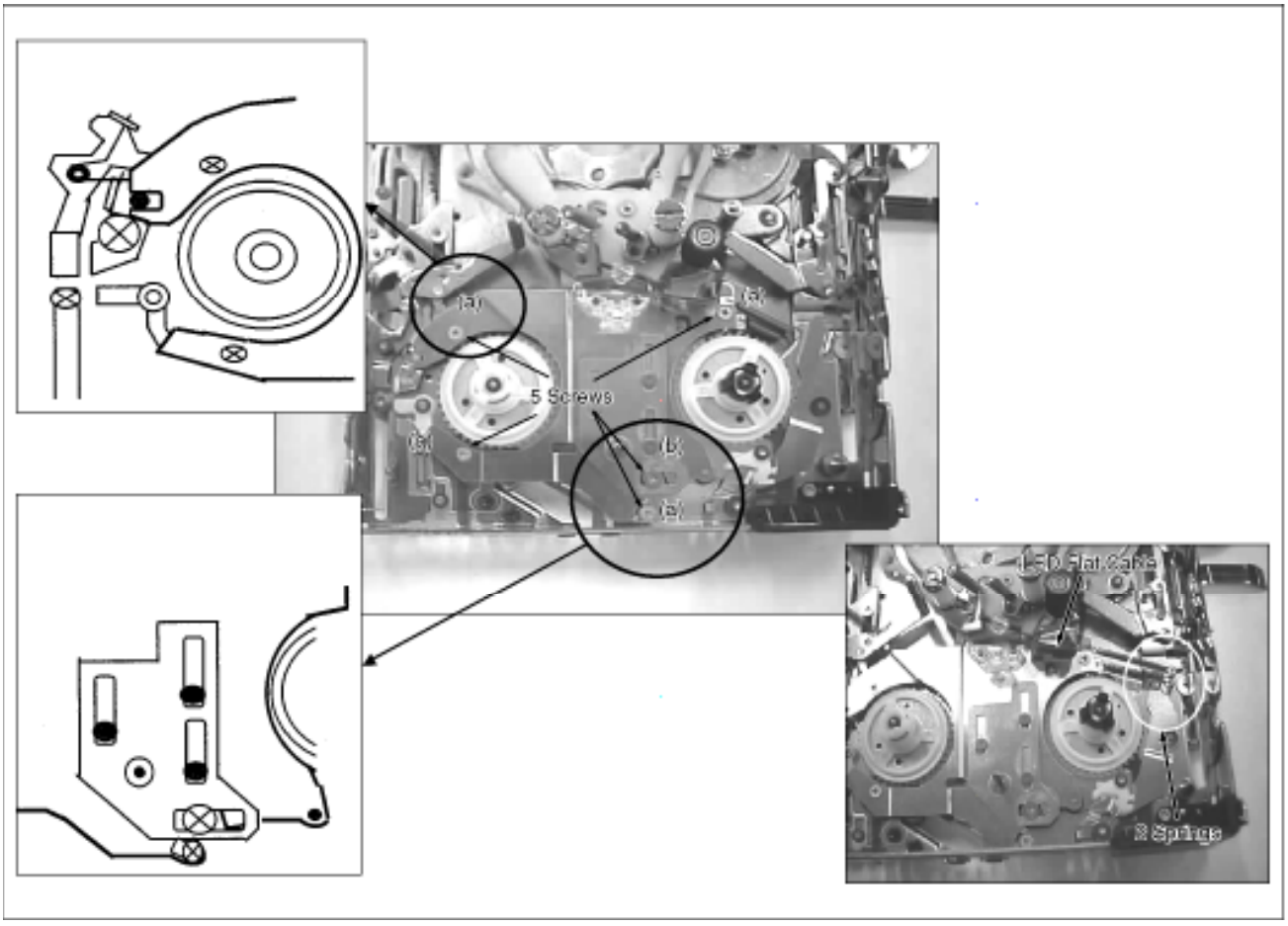


Fig. A18-3

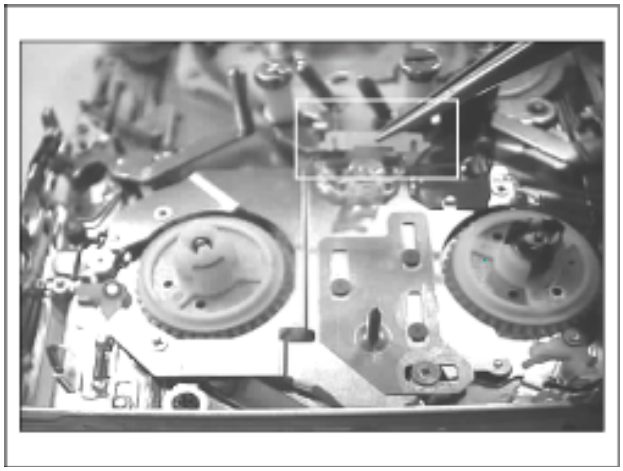


Fig. A19-1

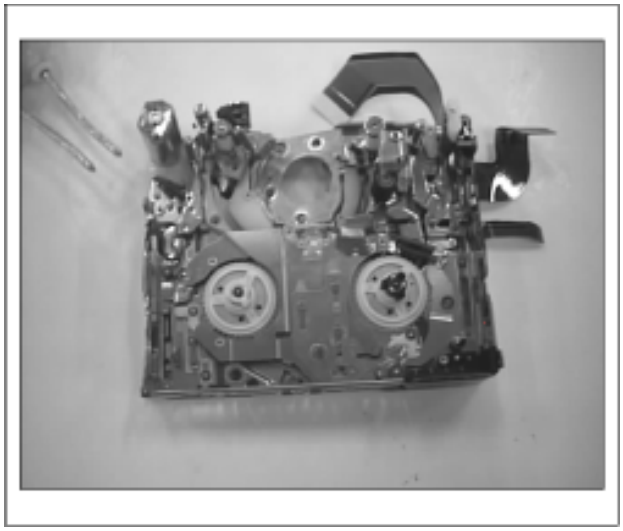


Fig. A19-2

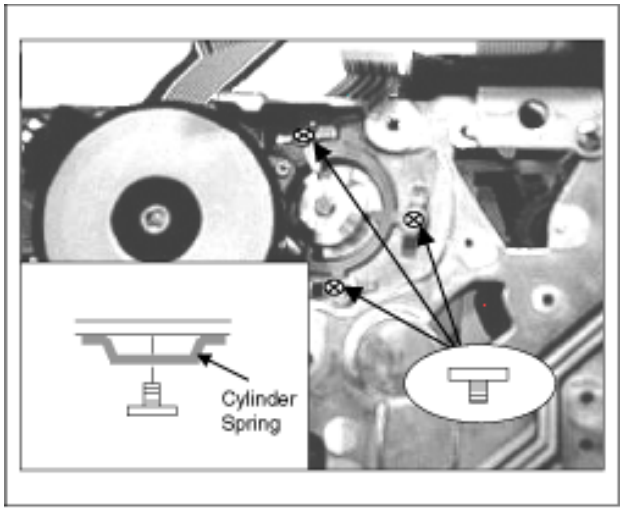


FIg. A19-3

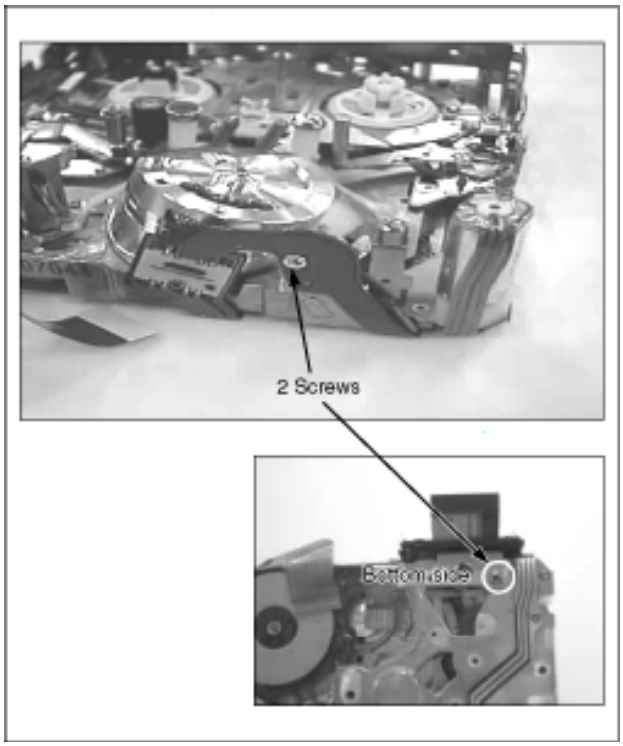


Fig. A20-1

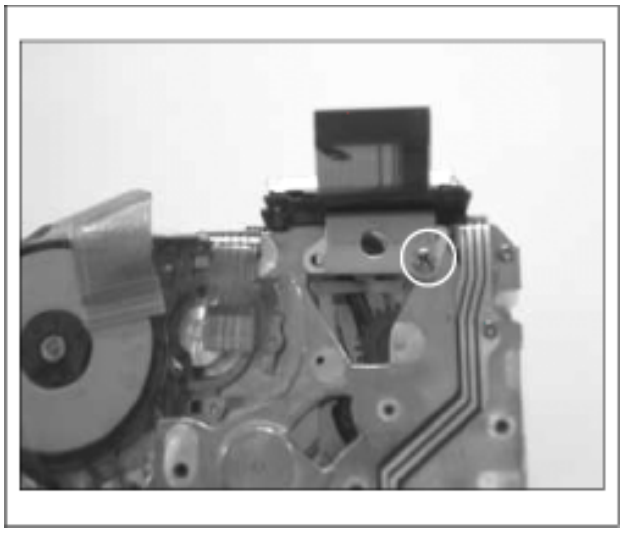


Fig. A20-2

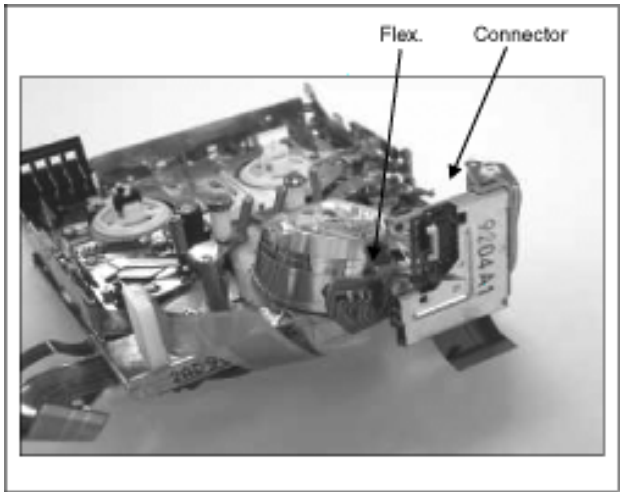


Fig. A20-3

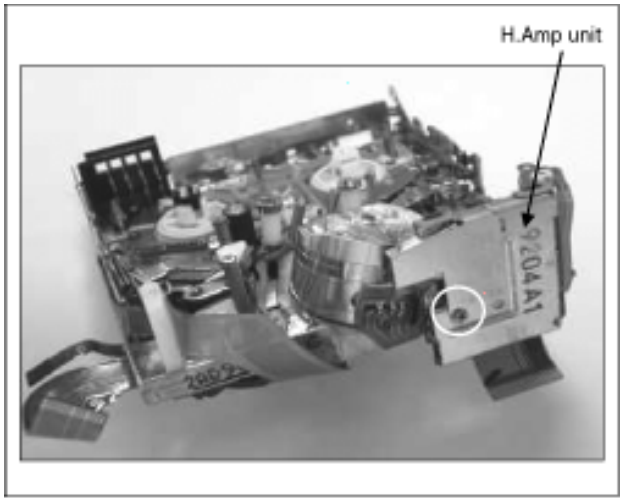


Fig. A21-1

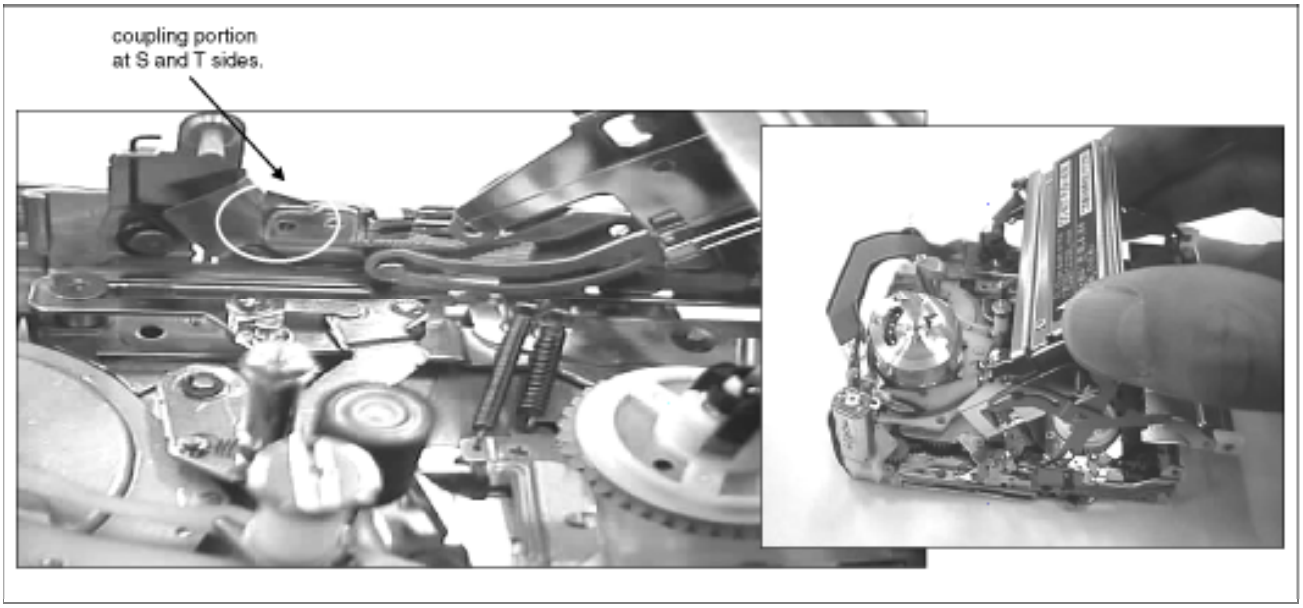


Fig. A21-2

TOP PREVIOUS NEXT

5.1 MECHANICAL ADJUST TABLE

TOP PREVIOUS NEXT

* 1) H.Amp Unit is applied only Q1 & Q2 mechanism.

No.	Item	Confirmation of Tape Running	Linearity Adjustment	Confirmation of B.E.R. Value	Capstan tilt Adjustment	S3 Base adjustment	Sub Chassis Adjustment
1	MECHANISM CHASSIS	--	--	•	--	--	--
2	Cassette Up Unit.	--	--	--	--	--	--
*3	H Amp Unit.	--	--	•	--	--	--
4	Cylinder Unit	•	•	•	--	--	--
5	RT Flex. Flame.	--	--	--	--	--	--
6	LED Holder	--	--	--	--	--	--
7	Cover Plate	--	--	--	--	--	--
8	Idler U.	--	--	•	--	--	--
9	Sub Chassis Unit	•	•	•	--	--	•
10	Pinch Arm	•	•	•	--	--	--
11	Center Gear	--	--	•	--	--	--
12	Rail Unit	•	•	•	--	--	--
13	S-Loading Gear	--	--	•	--	--	--
14	T-Loading Gear	--	--	•	--	--	--
15	Gear Cover	--	--	•	--	--	--
16	Pinch Beetle	--	--	•	--	--	--
17	Release Beetle	--	--	•	--	--	--
18	Tension Lever	•	•	•	--	--	--
19	Eject Arm	--	--	--	--	--	--
20	Interface Gears	--	--	•	--	--	--
21	Cam Gear	--	--	•	--	--	--
22	Chassis Radon	--	--	--	--	--	--
23	Boat Radon	--	--	--	--	--	--
24	Drive Gear	--	--	•	--	--	--
25	Capstan Holder	--	--	--	--	--	--
26	Capstan Motor	•	•	•	•	--	--
27	Loading Motor Unit	--	--	--	--	--	--

28	Mechanism Interface Flex.	--	--	--	--	--	--
29	Mode Switch	--	--	--	--	--	--
30	Deceleration Gears	--	--	•	--	--	--
31	Tension Plate	•	•	•	--	--	--
32	T4 Guide	--	--	--	--	--	--
33	Eject Lever	--	--	--	--	--	--
34	Pulley Cover	--	--	--	--	--	--
35	Pulley	--	--	--	--	--	--
36	S3 Base U.	•	•	•	--	•	--

TOP PREVIOUS NEXT

5.2 MECHANICAL ADJUSTMENT PROCEDURE

TOP PREVIOUS NEXT

No.	Item	Equipment	Fig.	Procedure
1	Confirmation of Tape Running	1. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS) 2. Post Adjustment Driver(VFK1278)	Fig. AD1-1	1) Confirm each post position in playback mode.
			Fig. AD1-2	2) Confirm condition of tape regulation in playback & review mode.
2	Linearity Adjustment	1.Tatsujin system(Refer to Fig.)	Fig. AD2-1	1) Set up Tatsujin System.
		2. Alignment Tape (PAL: VFM3110EDS/NTSC: VFM3010EDS) 3. Envelope Detecor Board (VFK1641) 4. Post Adjustment Driver (VFK1278)	Fig. AD2-2	2) Connect Envelope Detector Board between Measuring Board & Oscilloscope.
			--	3) Remove Adjustment Cover. * Location for Adjustment Cover depends on Models.
			Fig. AD2-3	4) Playback the Alignment Tape and adjust S2 & T3 posts by Screw Driver until wavefom becomes flat. After adjustment, B.E.R. should be confirmed by Electrial adjustment on the "Tatsujin".
3	Confirmation of B.E.R. Value	1.Tatsujin system(Refer to Fig.)	Fig. AD2-1	1) Refer to Electrical Adjustment on the "Tatsujin".
4	Capstan tilt Adjustment	1. Capstan Tilt Adj. Jig(VFK1638) 2. Small Phillips Screw Driver	Fig. AD4-1	1) Slide sensor pin to Capstan shaft. After touching,if OK, LED should be lit. * Do not touch when you confirm LED lit or not.
			Fig. AD4-2	2) If Ng, Capstan tilt should be adjusted. a) Tighten screw (A) until LED is lit. b) Loose screw (B) until LED is not lit. c)Tightenscrew (A) unti-clockwise until LED is lit .
5	S3 Base adjustment	1. Post Adjustment Driver(VFK1278)	Fig. AD5-1	1) Adjust S3 screw as Evvelope becomes flat.
			Fig. AD5-2	2) Tighten a screw 180 degree as "ENV 1". 3) Loosen a screw as ENV 2. 4) Tighten a screw until ENV becomes flat as ENV 3 and tighten a screw 180 degree again.
6	Sub Chassis Adjustment	1. Small Phillips Screw Driver	Fig. AD6-1	1) Make Review Position. * Set Loading mode and then,stop Pinch Roller & Capstan shaft is touched.

			Fig. AD6-2	2) Loosen a screw. After fixing a shaky Sub Chassis,then tighten a screw.

Fig. AD1-1

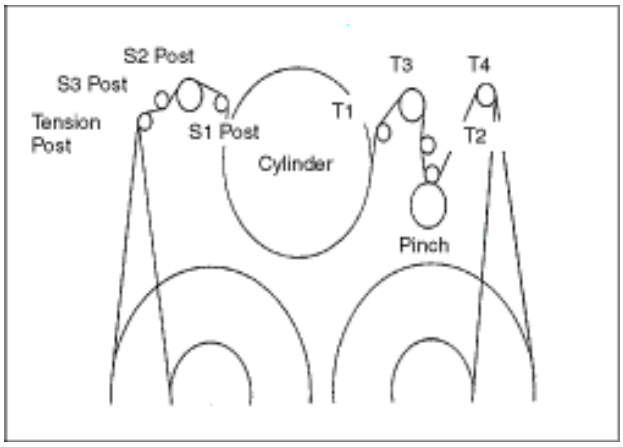


Fig. AD1-2

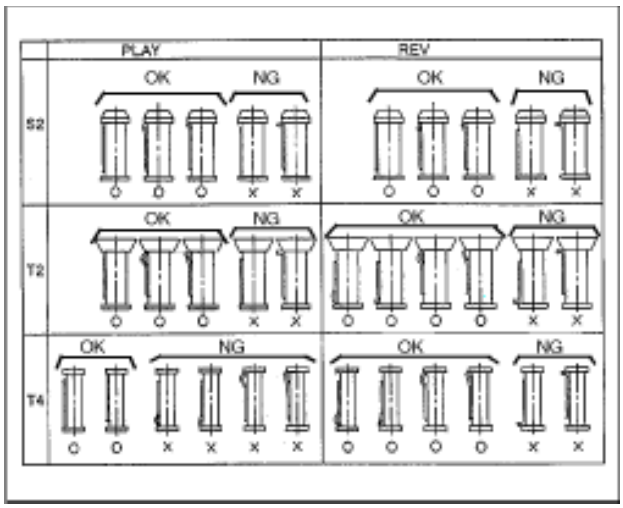


Fig. AD2-1

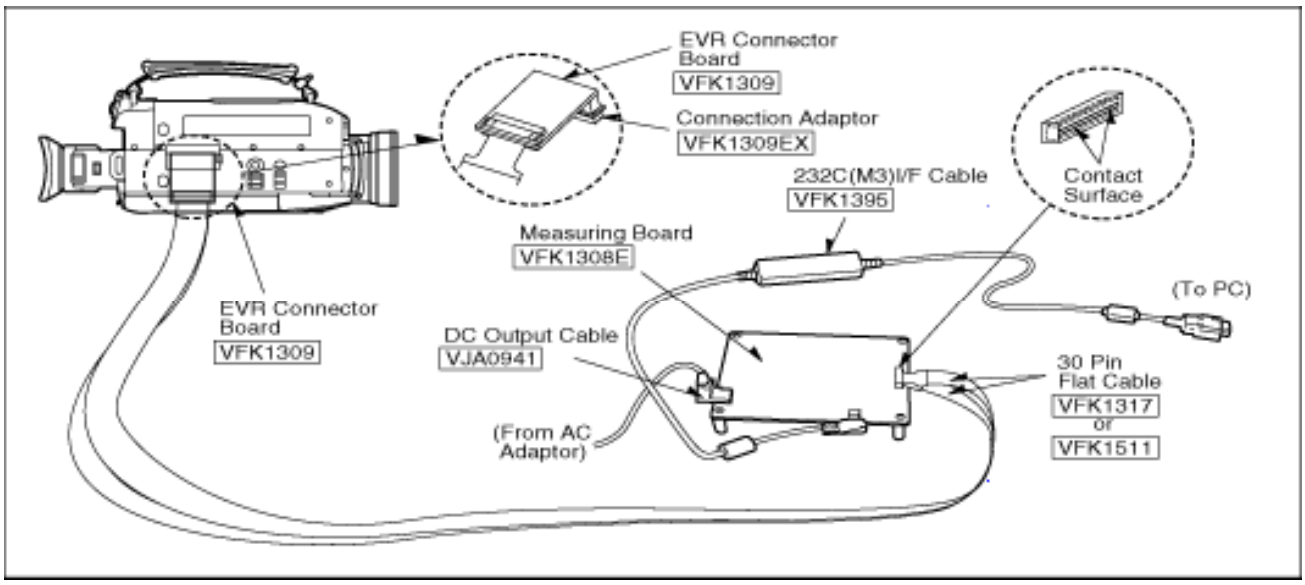


Fig. AD2-2

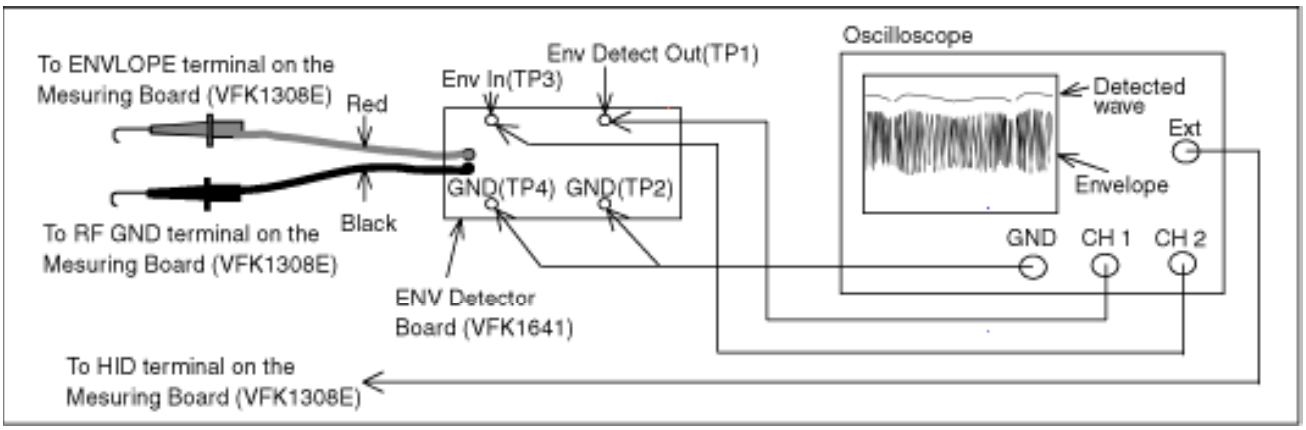


Fig. AD2-3

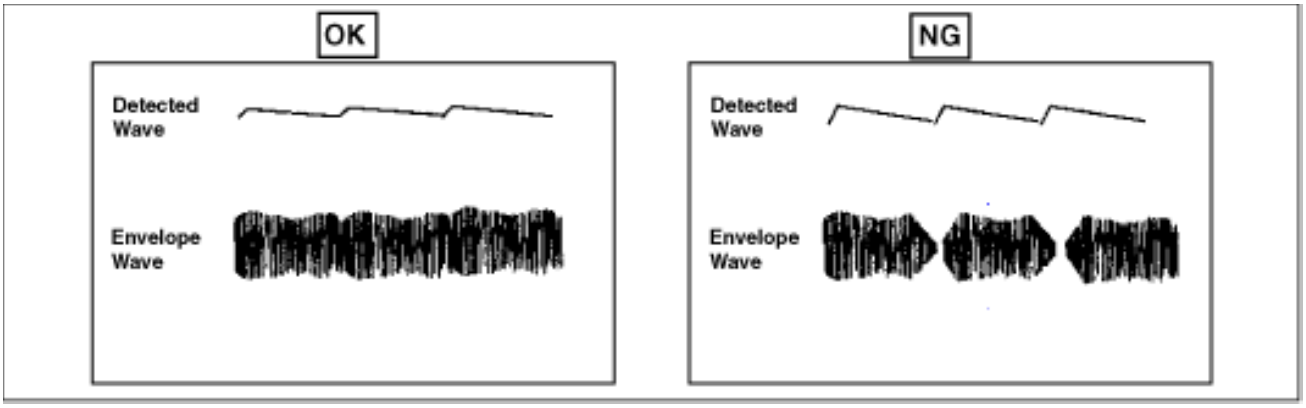


Fig. AD4-1

Fig. AD4-2

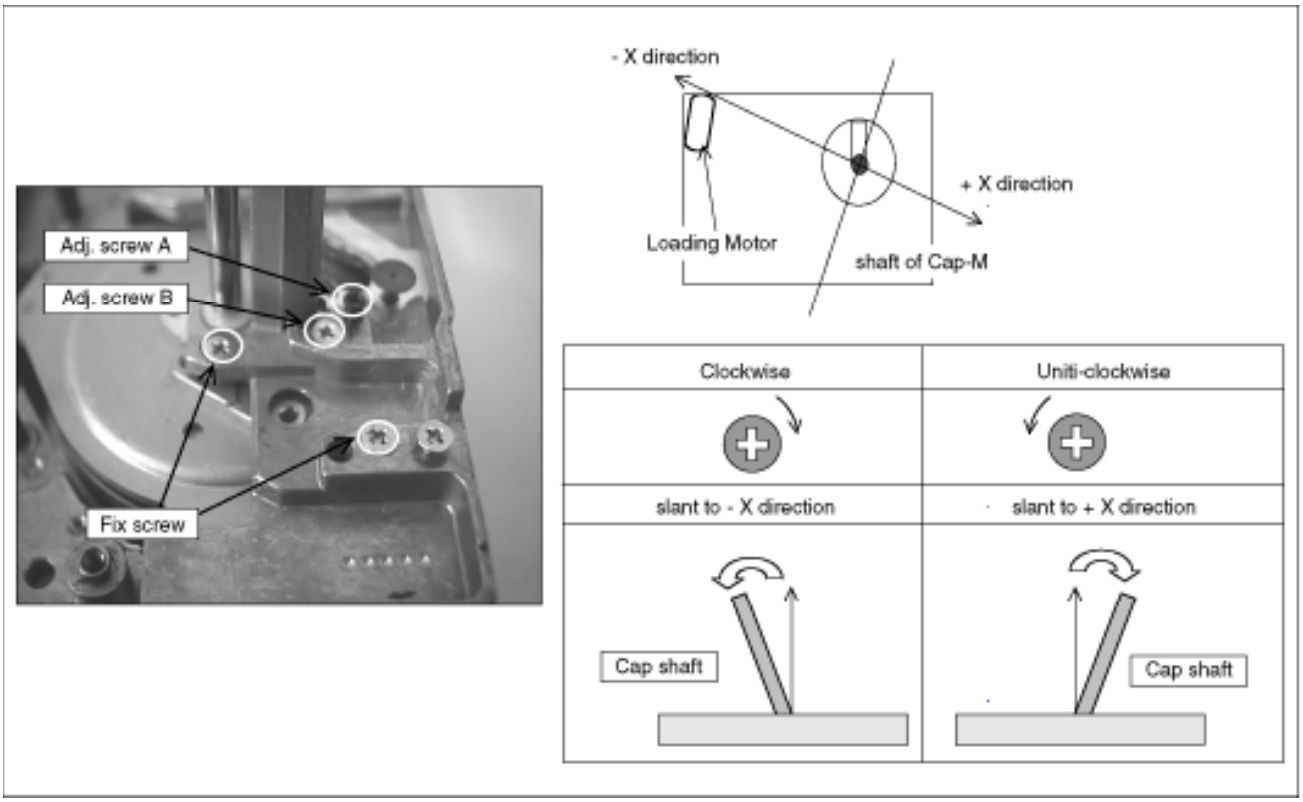


Fig. AD5-1

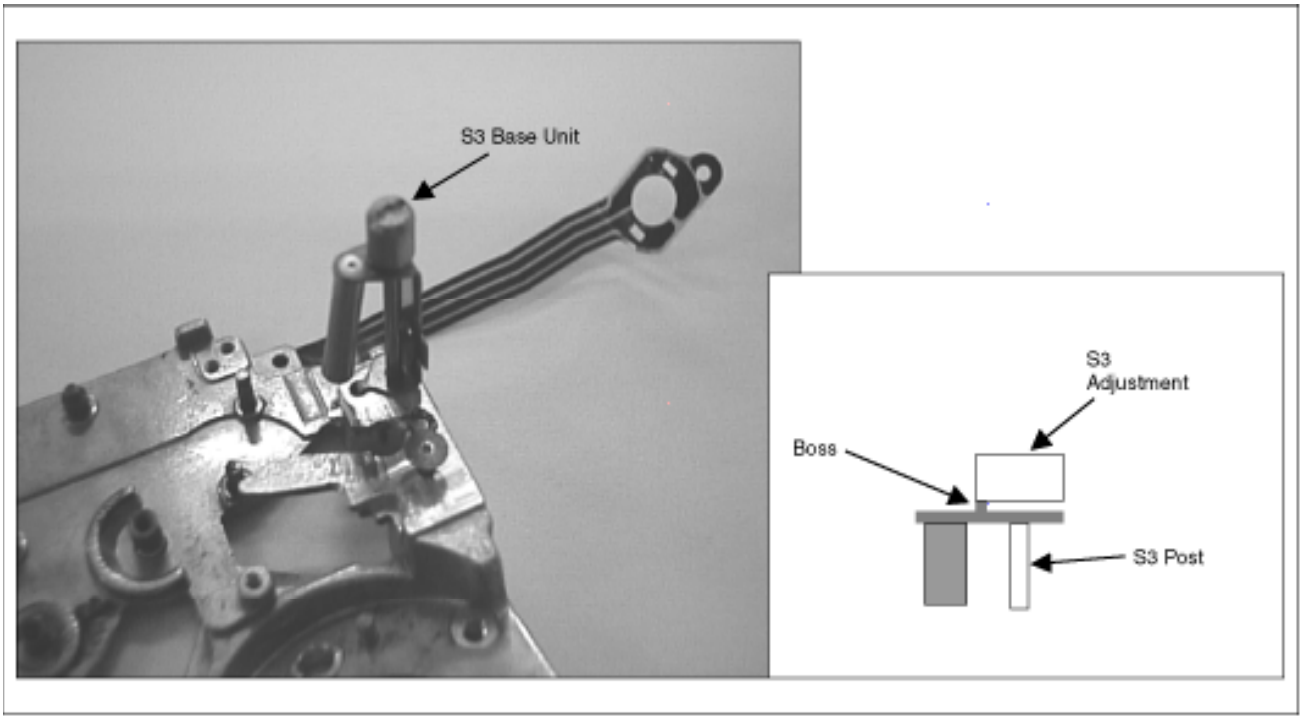


Fig. AD5-2

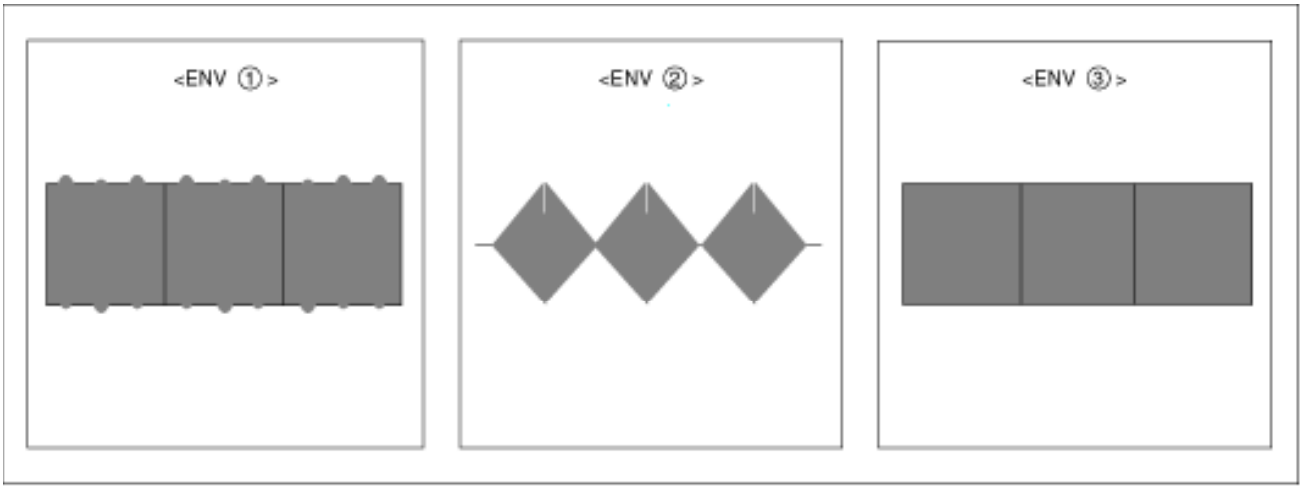


Fig. AD6-1

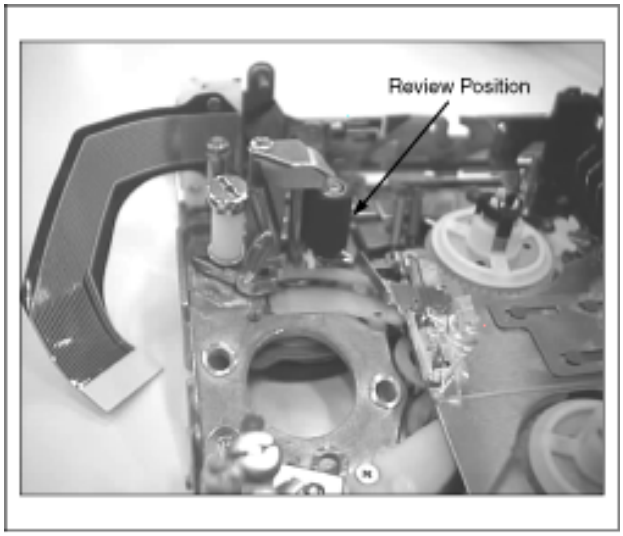
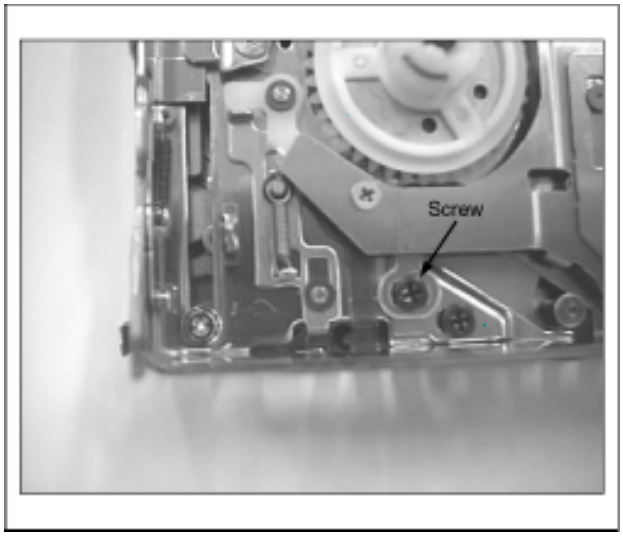


Fig. AD6-2



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6.1 Q1& Q2 VCR MECHANISM SECTON (1)

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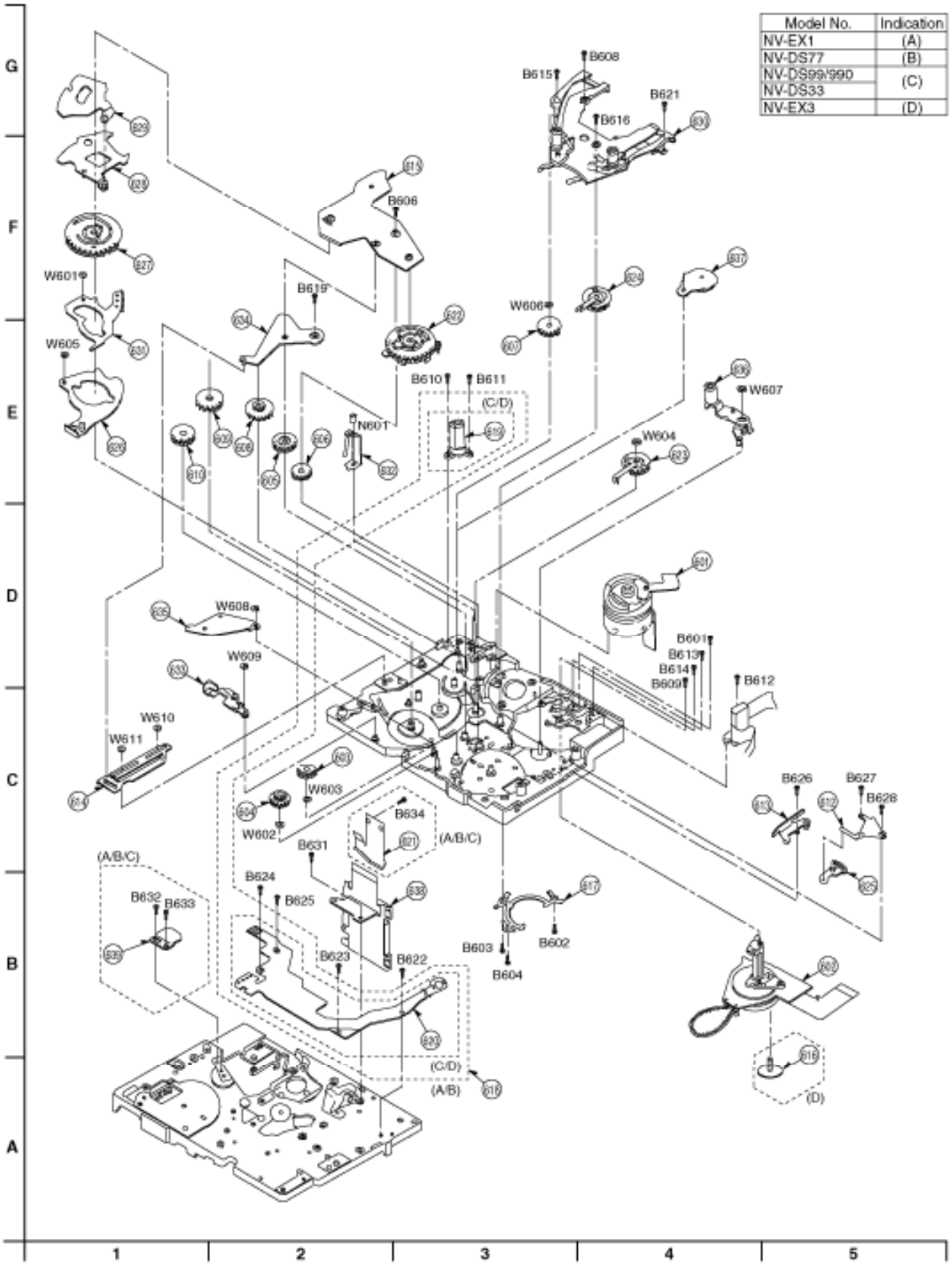
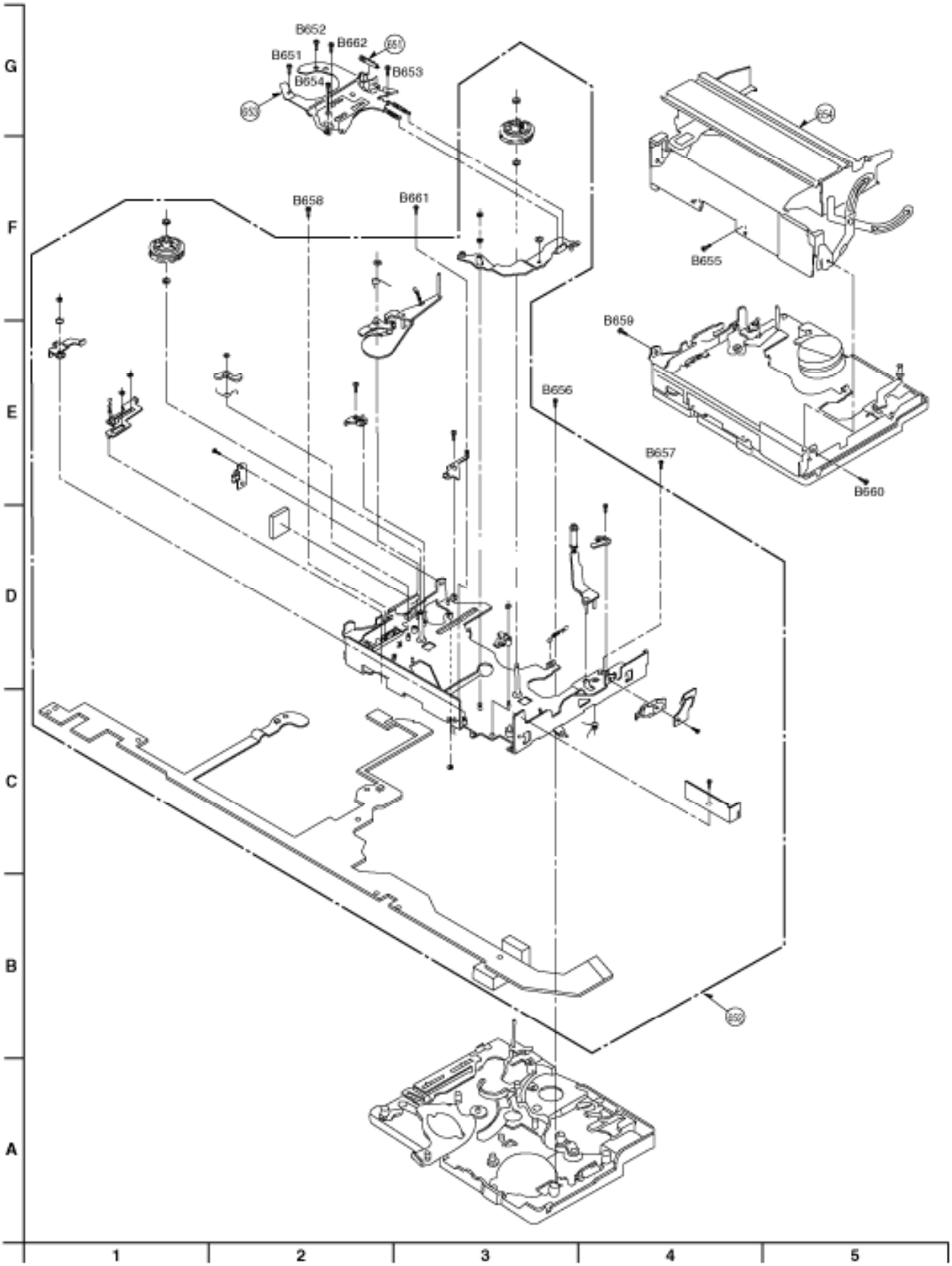

Model No. | Indication
NV-EX1 | (A)
NV-DS77 | (B)
NV-DS99/990 | (C)
NV-DS33 | (C)
NV-EX3 | (D)
G
F
E
D
C
B
A
1
2
3
4
5
B608
B615
B621
B616
B606
B619
W601
W605
W606
B610
B611
(C/D)
W607
W604
N601
W608
W609
W610
W611
W603
W602
B601
B613
B614
B609
B612
B626
B627
B628
B634
(A/B/C)
B631
B624
B625
B632
B633
B623
B622
B603
B602
B604
(C/D)
(A/B)
(D)

6.2 Q1& Q2 VCR MECHANISM SECTION (2)

TOP PREVIOUS NEXT

TOP PREVIOUS NEXT


B652
B662
B651
B653
B654
B658
B661
B655
B650
B656
B657
B660
G
F
E
D
C
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A
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6.3 Q3 VCR MECHANISM SECTION (1)

TOP PREVIOUS NEXT

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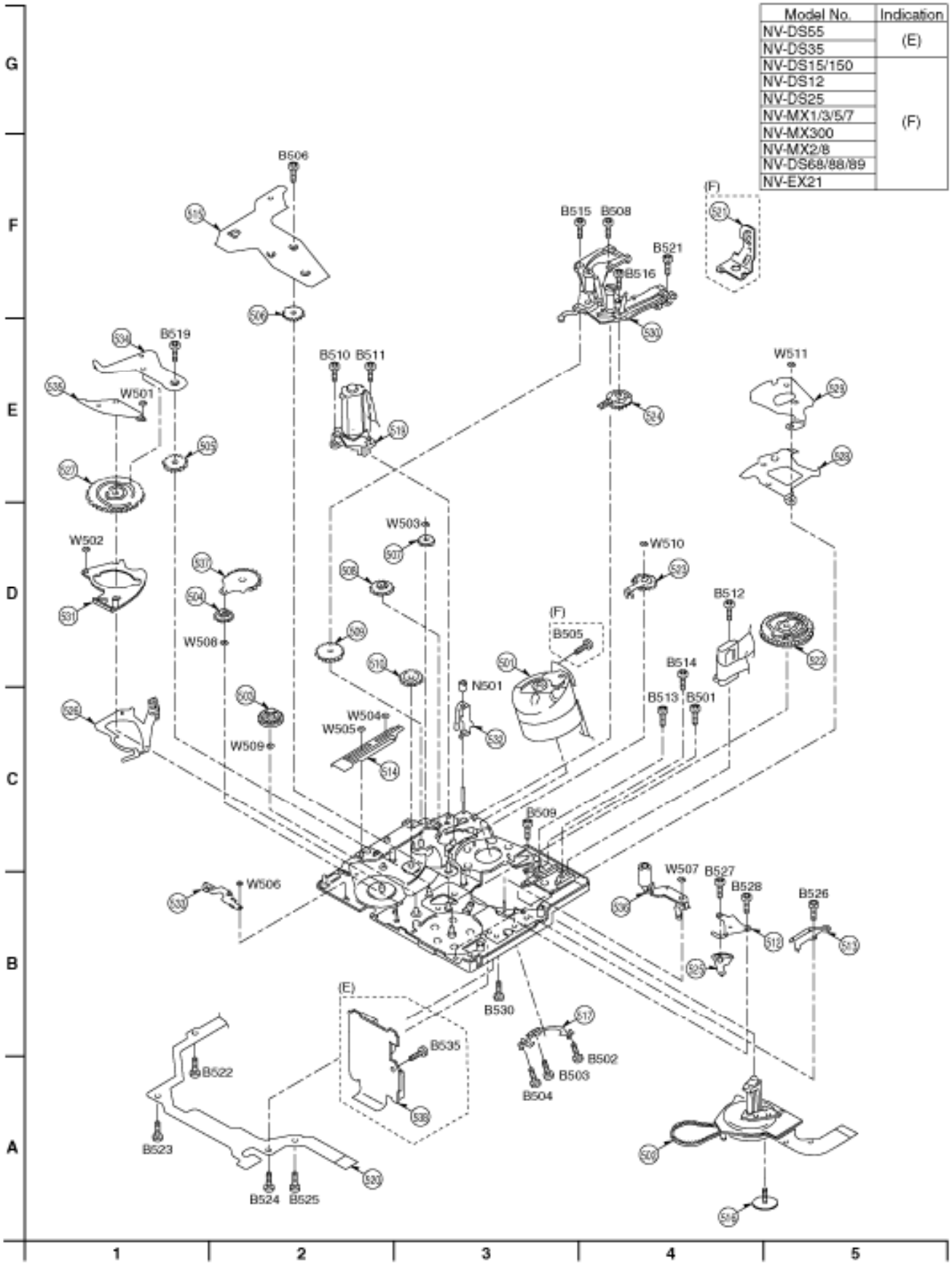
Model No.	Indication
NV-DS55	(E)
NV-DS35	
NV-DS15/150	(F)
NV-DS12	
NV-DS25	
NV-MX1/3/5/7	
NV-MX300	
NV-MX2/8	
NV-DS68/88/89	
NV-EX21	



6.4 Q3 VCR MECHANISM SECTION (2)

TOP PREVIOUS NEXT

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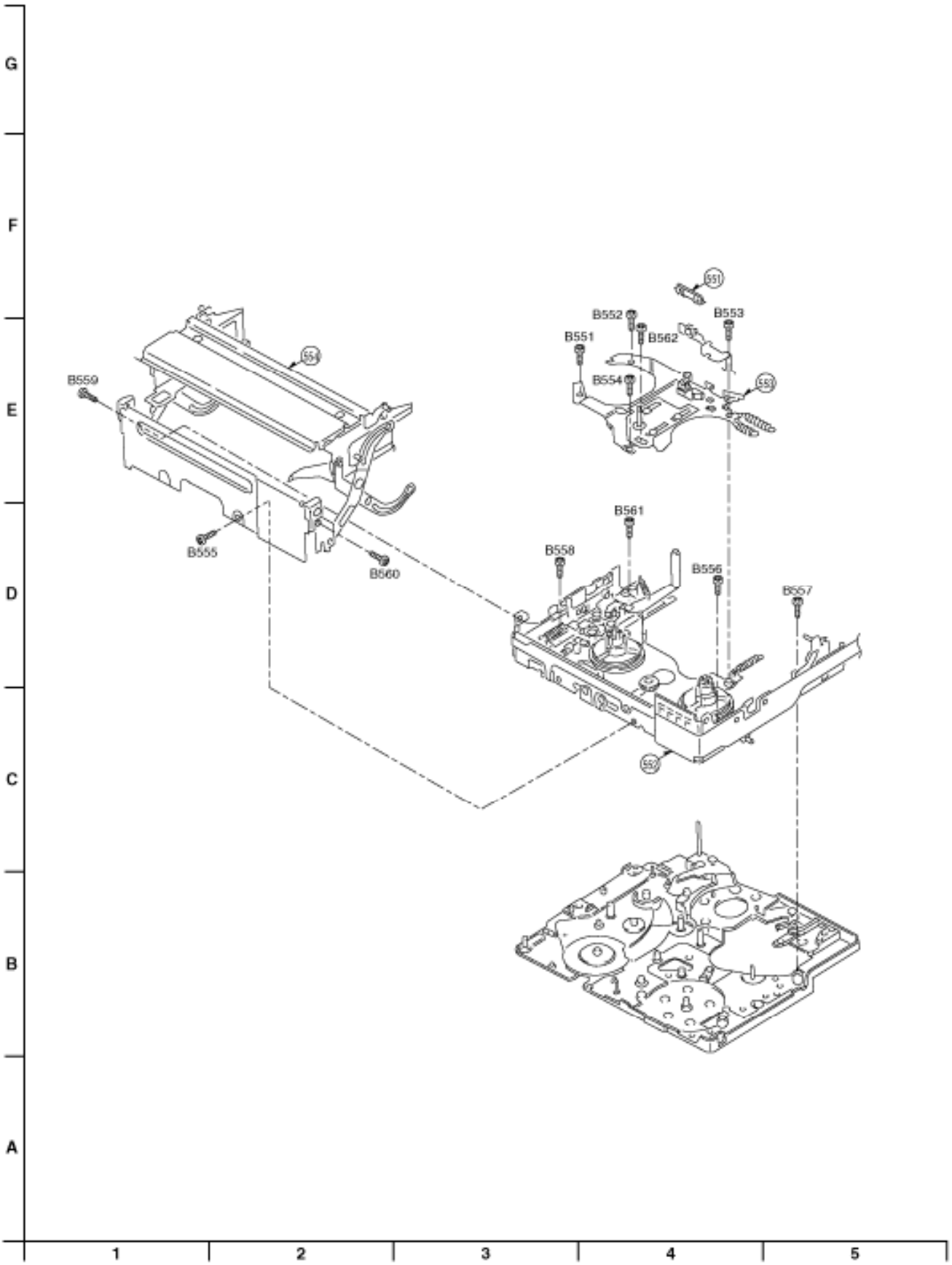
G
F
E
D
C
B
A
1
2
3
4
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B551
B552
B553
B554
B555
B556
B557
B558
B559
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557

7.1 Q1& Q2 VCR MECHANISM SECTION
(1) PARTS LIST

TOP PREVIOUS NEXT

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark: △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
601	VEG1495	CYLINDER U.	
602	DFX25A7VWB	CAPSTAN U.	
603	VDG1284	DRIVE GEAR	
604	VDG1285	CENTER GEAR	
605	VDG1290	INTERFACE GEAR (C)	
606	VDG1291	INTERFACE GEAR (D)	
607	VDG1295	DECELERATION (A)	NV-EX1,NV-DS77
607	VDG1330	DECELERATION (A)	NV-DS99/990,NV-DS33,NV-EX3
608	VDG1296	DECELERATION (B)	NV-EX1,NV-DS77
608	VDG1331	DECELERATION (B)	NV-DS99/990,NV-DS33,NV-EX3
609	VDG1297	INTERFACE GEAR (A)	
610	VDG1303-A	INTERFACE GEAR (B)	
612	VMA9908	PULLEY COVER	
613	VMA9916	T4 GUIDE	
614	VMA9917	TENSION PLATE	
615	VMA0E52	GEAR COVER	
616	VHD1430	CAPSTAN HOLDER	NV-EX3
617	VMC1443	CYLINDER SPRING	
618	L6DA8DKC0001	LOADING MOTOR U.	NV-EX1,NV-DS77
619	VEM0679	LOADING MOTOR U.	NV-DS99/990,NV-DS33,NV-EX3
620	VWJ1297	MECHANISM INTERFACE FLEX.	NV-DS99/990,NV-DS33,NV-EX3
622	K0ZZ00000453	MODE SWITCH	
623	VXA6124	S LOAD GEAR U.	
624	VXA6125	T LOAD GEAR U.	

625	VXA6133	PULLEY COVER	
626	VXA6134	CHASSIS RADON U.	
627	VXA6135	CAM GEAR U.	
628	VXA6136	PINCH BEETLE	
629	VXA6137	RELEASE BEETLE	
630	VXA6138	RAIL U.	
631	VXA6169	BOAT RADON U.	
632	VXA6184	S3 BASE U.	
633	VXL2814	EJECT LEVER U.	
634	VXL2815	TENSION LEVER U.	
635	VXL2816	EJECT ARM U.	
636	VXL2897	PINCH ARM U.	
637	VXL2818	IDLER U.	
638	VYK8485	HEAD AMP U.	NV-EX1
638	VYK8244	HEAD AMP U.	NV-DS77
638	VYK8886	HEAD AMP U.	NV-DS99/990,NV-DS33
638	VYK9102	HEAD AMP U.	NV-EX3
621	VSC4802	SHIELD CASE	NV-EX1
621	VSC4758	SHIELD CASE	NV-DS77,NV-DS99/990,NV-DS33
639	VMA9926	CAPSTAN HOLDER	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B601	VHD1155	SCREW	
B602	VHD1372	SCREW	
B603	VHD1372	SCREW	
B604	VHD1372	SCREW	
B606	VHD1160	SCREW	
B608	VHD1160	SCREW	
B609	VHD1406	SCREW	
B610	VHD1161	SCREW	
B611	VHD1161	SCREW	
B612	VHD1161	SCREW	
B613	VHD1161	SCREW	
B614	VHD1161	SCREW	

B615	VHD1162	SCREW	
B616	VHD1162	SCREW	
B619	VHD1163	SCREW	
B621	XQN12+B1	SCREW	
B622	XQN12+A1	SCREW	
B623	XQN12+A1	SCREW	
B624	XQN12+A1	SCREW	
B625	XQN12+A1	SCREW	
B626	XQN12+A1	SCREW	
B627	XQN12+A12FN	SCREW	
B628	XQN12+A12FN	SCREW	
B631	XQN12+B2	SCREW	
B632	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B633	VHD1162	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
B634	XQN16+B12	SCREW	NV-EX1,NV-DS77,NV-DS99/990,NV-DS33
N601	VHN0324	NUT	
W601	VMX2028	WASHER	
W602	VMX2751	WASHER	
W603	VMX2752	WASHER	
W604	VMX2392	WASHER	
W605	VMX2028	WASHER	
W606	VMX2028	WASHER	
W607	VMX2028	WASHER	
W608	VMX2028	WASHER	
W609	VMX2028	WASHER	
W610	VMX2028	WASHER	
W611	VMX2028	WASHER	

TOP PREVIOUS NEXT

7.2 Q1& Q2 VCR MECHANISM SECTION (2) PARTS LIST

TOP PREVIOUS NEXT

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark: △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
651	VMD2975	LED HOLDER	
652	VXA6537	SUB SHASSIS U.	NV-DS99/990,NV-DS33,NV-EX3
652	VXA6146	SUB SHASSIS U.	NV-EX1,NV-DS77
653	VXA6151	COVER PLATE U.	
654	VXA6159	CASSETTE UP U.	
B651	VHD1162	SCREW	
B652	VHD1162	SCREW	
B653	VHD1162	SCREW	
B654	VHD1162	SCREW	
B655	VHD1207	SCREW	
B656	VHD1164	SCREW	
B657	VHD1164	SCREW	
B658	VHD1171	SCREW	
B659	VHD1314	SCREW	
B660	VHD1314	SCREW	
B661	VHD1163	SCREW	
B662	VHD1163	SCREW	

TOP PREVIOUS NEXT

7.3 Q3 VCR MECHANISM SECTION (1) PARTS LIST

TOP PREVIOUS NEXT

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
501	VEG1570	CYLINDER U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
501	VEG1495	CYLINDER U.	NV-DS35/55
502	DFX25A7VWC	CAPSTAN U.	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
502	DFX25A7VWB	CAPSTAN U.	NV-DS35/55
503	VDG1284	DRIVE GEAR	
504	VDG1285	CENTER GEAR	
505	VDG1290	INTERFACE GEAR (C)	
506	VDG1291	INTERFACE GEAR (D)	
507	VDG1330	DECELERATION GEAR (A)	
508	VDG1331	DECELERATION GEAR (B)	
509	VDG1297	INTERFACE GEAR (A)	
510	VDG1303	INTERFACE GEAR (B)	
512	VMA9908	PULLEY COVER	
513	VMA9916	T4 GUIDE	
514	VMA9917	TENSION PLATE	
515	VMA0E52	GEAR COVER	
516	VHD1430	CAPSTAN HOLDER	
517	VMC1443	CYLINDER SPRING	
519	VEM0679	LOADING MOTOR U.	
520	VWJ1297	MECHANISM INTERFACE FLEX.	
521	VMP6271	RT FLEX. FRAME	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
522	K0ZZ00000453	MODE SWITCH	
523	VXA6124	S LOAD GEAR U.	
524	VXA6125	T LOAD GEAR U.	

525	VXA6133	PULLEY	
526	VXA6134	CHASSIS RADON U.	
527	VXA6135	CAM GEAR U.	
528	VXA6136	PINCH BEETLE	
529	VXA6137	RELEASE BEETLE	
530	VXA6138	RAIL U.	
531	VXA6169	BOAT RADON U.	
532	VXA6184	S3 BASE U.	
533	VXL2814	EJECT LEVER U.	
534	VXL2815	TENSION LEVER U.	
535	VXL2816	EJECT ARM U.	
536	VXL2897	PINCH ARM U.	
537	VXL2818	IDLER U.	
538	VYK8886	HEAD AMP U.	NV-DS35/55
B501	VHD1155	SCREW	
B502	VHD1372	SCREW	
B503	VHD1372	SCREW	
B504	VHD1372	SCREW	
B505	XQN14+B1FN	SCREW	NV-EX21,NV-DS68/88/89/25/12/15/150,NV-MX2/8/300/1/3/5/7
B506	VHD1160	SCREW	
B508	VHD1160	SCREW	
B509	VHD1406	SCREW	
B510	VHD1161	SCREW	
B511	VHD1161	SCREW	
B512	VHD1161	SCREW	
B513	VHD1161	SCREW	
B514	VHD1161	SCREW	
B515	VHD1162	SCREW	
B516	VHD1162	SCREW	
B519	VHD1163	SCREW	
B521	XQN12+B1	SCREW	
B522	XQN12+A1	SCREW	

B523	XQN12+A1	SCREW	
B524	XQN12+A1	SCREW	
B525	XQN12+A1	SCREW	
B526	XQN12+A1	SCREW	
B527	XQN12+A12FN	SCREW	
B528	XQN12+A12FN	SCREW	
B530	XQN16+B2	SCREW	
B535	XQN16+B3	SCREW	NV-DS35/55
N501	VHN0324	NUT	
W501	VMX2028	WASHER	
W502	VMX2028	WASHER	
W503	VMX2028	WASHER	
W504	VMX2028	WASHER	
W505	VMX2028	WASHER	
W506	VMX2028	WASHER	
W507	VMX2028	WASHER	
W508	VMX2751	WASHER	
W509	VMX2752	WASHER	
W510	VMX2392	WASHER	
W511	VMX2028	WASHER	

TOP PREVIOUS NEXT

7.4 Q3 VCR MECHANISM SECTION (2) PARTS LIST

TOP PREVIOUS

Note: 1. *Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark △ have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref. No.	Part No.	Part Name & Description	Remarks
551	VMD2975	LED HOLDER	
552	VXA6537	SUB CHASSIS U.	
553	VXA6151	COVER PLATE U.	
554	VXA6159	CASSETTE UP U.	
B551	VHD1162	SCREW	
B552	VHD1162	SCREW	
B553	VHD1162	SCREW	
B554	VHD1162	SCREW	
B555	VHD1207	SCREW	
B556	VHD1164	SCREW	
B557	VHD1164	SCREW	
B558	VHD1171	SCREW	
B559	VHD1314	SCREW	
B560	VHD1314	SCREW	
B561	VHD1163	SCREW	
B562	VHD1163	SCREW	

TOP PREVIOUS